

An empirical investigation into heightened listening as an access tool for electroacoustic music

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Disc inside back cover contains audio files (5 channel and stereo versions) for:
Night and Day first version, Night and Day final version, soundwalk and binaural
mix.

Abstract

The heightened listening (HL) project investigated whether raising aural awareness in young inexperienced listeners could influence their appreciation of electroacoustic (E/A) music that includes real world sounds. It builds on the Intention/Reception (I/R) project (Weale, 2005), which found that inexperienced listeners can appreciate this type of music. Heightened listening is defined in the HL project as a focused concentration on the internal character of sounds while, in contrast to reduced listening, still allowing external associations to be made. It allows for shifts in focus between these aspects of sound depending on what is appropriate for the work that is being listened to.

Workshops, which included listening exercises based on those advocated by R. Murray Schafer, were organised in a number of schools and their influence on appreciation was tested through questionnaires. A soundscape work was composed as test material to be used in the workshops. After data analysis the piece was recomposed based on listener feedback and then retested in a later session to investigate whether the intention/reception loop improved. As a reference, workshops were also conducted with blind or visually impaired participants (as subjects who already possess heightened sonic awareness through practiced everyday listening) to explore their response to E/A music.

The results suggested that raised aural awareness did enhance appreciation for the inexperienced listeners. Two thirds of the participants expressed an interest in listening again to sound-based music in the future and the majority of these said the listening exercises aided their ability to listen to the sounds. Responses indicated that the results would have been more convincing if the methodology had allowed greater participation in the creative process. Future research could integrate this and explore how heightened listening could enable further use of the imagination, metaphors and memories in creative practice.

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Introduction

The heightened listening (HL) project investigates the potential for widening access to electroacoustic (E/A) music through learning heightened listening skills. It builds on the Intention/Reception (I/R) project, which has demonstrated that a significant percentage of inexperienced listeners can appreciate E/A music particularly when real world sounds are used as material (Weale, 2006:196).

The foundations of the I/R project were laid by the research of Leigh Landy. In 1999 Landy made a plea for greater triangulation within the musicology of (E/A) music (Landy, 1999:61). He argued that many in the E/A community demonstrated an 'island mentality' resulting in a lack of coherence in, and understanding of, electroacoustic musicology (ibid). Triangulation, whereby feedback and collaboration between receiver and creator is incorporated into research, was proposed throughout the article as a solution to this problem.

One area he gave as an example where E/A musicology was moving forward was in the debate on listening strategies (ibid:67). As part of this he described Mark Taylor's concept of 'heightened listening', which relates the experience of the visually impaired to the acousmatic listening situation. In this situation sound itself becomes the main focus encouraging listeners to concentrate more closely, a skill which is more developed among the visually impaired and regular listeners of electroacoustic music.

For the HL project it is proposed that heightened listening is defined as a close concentration on sound that allows external links to be made. This is distinct from reduced listening that actively ignores any external information in order to concentrate purely on the sound itself. Heightened listening allows shifts in focus between the internal (the sound itself) and external (source or associations) depending on which is more appropriate for a particular listening situation. While appreciating internal qualities, it also encourages the use of memory and imagination, which can help to develop an acute spatial awareness. The HL project proposes that learning these skills can make the appreciation of E/A works that

include real-world sounds (particularly soundscape pieces) more likely. While it was not thought that inexperienced listeners could acquire this level of skill in a short period, the project aimed to investigate if simply raising their sonic awareness (beginning a practice that might develop over time) would influence their appreciation. Therefore, the results of the I/R project and Taylor's link between heightened listening and the acousmatic situation led to the following hypothesis:

Raising sonic awareness in inexperienced listeners could result in a greater appreciation of electroacoustic works that include real world sounds as material.

In exploring this hypothesis the goal of the HL project was to investigate whether over two workshops listening exercises designed to increase aural awareness would increase appreciation for inexperienced listeners in schools. As with the I/R project it used largely qualitative questionnaires to solicit data but also incorporated triangulation into this process. A soundscape piece was composed as test material, which was reworked based on case study feedback from the different groups to investigate whether triangulation would produce a more accessible work. As a reference, similar tests were proposed with blind or visually impaired listeners to investigate how they, who by definition should already possess a heightened sense of listening, would respond to the same work.

In summary, the principal research question for the HL project is:

Can heightened listening skills be developed by raising sonic awareness in inexperienced listeners as a means of aiding the appreciation of E/A music

In order to answer the research question the main areas of study for the HL project are:

- How to raise sonic awareness in young people.
- Whether increased sonic awareness results in greater appreciation of the composed work in the school group.
- Whether the blind subjects have greater appreciation due to greater aural skills learnt over years.

- What impact information from the composer has on appreciation of the composed work.
- Whether completing the intention/reception loop through triangulation produces a more accessible work.

Chapter 1 provides a contextual review of scholarly work in these main areas of study, including problems of access to electroacoustic music, the Intention/ Reception project, listening strategies in electroacoustic music and soundscape theory and education. Chapter 2 provides an account of the development of the methodology necessary to answer the research question, including analyses of the beta tests and an outline of alterations that were necessary. Chapter 3 is concerned with an analysis of the results from the main tests carried out in 4 schools as well as tests conducted with blind or visually impaired participants. Chapter 4 provides an evaluation of the results overall, possible areas for future research and conclusions in relation to the aims of the research and the hypothesis.

1. The project in context

1.1. Contextual basis of the research

1.1.1. The movement to reception in music and literature

Since the 1990s there has been a greater emphasis in E/A musicology on the listener. This has been influenced by developments in literary criticism, where a number of post-modernist writers have moved the focus from the text itself to an emphasis on how the reader interprets it; this is demonstrated by reader-response criticism (Tyson, 2006:169) and reception theory developed in West Germany (Holub, 1984:xi). There has been an emergence of the idea that a text can have many meanings depending on the interpretation of the reader and how they contextualise it (Crossman, 1980:154). Similarly in E/A music listeners' interpretations of sounds can vary greatly. Trevor Wishart argues that we rely in normal life on many visual cues to recognise the sources of sounds and without these we still use aural cues to contextualise the source and help us interpret events (Wishart, 1986:49). So as with literature how the listener (or reader) interprets the sound (or text) depends greatly on how they contextualise it, which can vary significantly.

As Crossman notes, the reader plays an important role for post-modern writers such as Stanley Fish who speaks of readers having 'reading strategies' (mirrored by the use of terms such as 'listening strategy' in E/A music as introduced by Christiane ten Hoopen (Landy, 1994:49)) and Jacques Derrida stating that 'the reader writes the text' (Crossman, 1980:149). Likewise Trevor Wishart argues that, for him, in music: 'The experience that the listener has *is* the music' (Wishart, 1996:43). Additionally Katharine Norman highlights the role of the listener as being central to the success of the art work when talking about composing with real world sounds (Norman, 1996:2).

The shift from the poietic (creative or composition process) to the aesthetic (perception or interpretation) in musicology was evident in research in the mid-90s by Andra McCartney, culminating in her PhD project that investigated listeners' responses to the work of Hildegard Westerkamp (McCartney, 1999). For

Westerkamp the listener plays an important role, as for her the main question in soundscape composition is how listeners relate to what the composer is attempting to communicate, especially if the materials used originate from a foreign country or culture. She argues that although there maybe no answer to this, it is the question itself that is important as it 'brings the unknown listener into the composer's consciousness and introduces the possibility of a relationship, an interaction between composition and receiving ear' (Westerkamp, 2002:56).

This shift has also been evident amongst a number of other electroacoustic composers and scholars, such as Denis Smalley. As Landy acknowledges, Smalley's influential theory of spectromorphology is clearly applicable to the viewpoint of the listener (Landy, 1999:67). For the I/R project Rob Weale took a pluralistic view that the intention of the creator and the interpretation of the listener were of equal importance in understanding the meaning of a work (Weale, 2005:52). The HL project develops this by incorporating triangulation into the poietic process in order to aid the reception of the test material.

1.1.2. Problems of access to electroacoustic music – the foundations of the Intention / Reception project

It has been over 20 years since problems of access and dissemination of E/A music were raised by Leigh Landy in a paper at the International Computer Music conference in 1990 (Landy, 1990:369). Nearly 15 years later in 2004 he suggested things had not improved believing the music was 'still having teething problems in most countries in terms of its acceptance' (Landy, 2004:227).

In an article in 1994 Landy proposed the concept of 'something to hold onto factors' (SHFs) as a way of helping listeners gain access to E/A works. He argued that 'Today many potential listeners have not acquired an enthusiasm for timbral music as they simply do not know how to listen to it' (Landy, 1994:50). Therefore the goal of the article is stated as – 'It is hoped that more composers (along with musicologists) will consider providing listeners, especially first time listeners, with a listening strategy.... so that they may appreciate, and therefore not be confused

by new timbral works. Furthermore, it is hoped that the framework proposed below may be of use to the composer with respect to making decisions relevant to the “something to hold on to factor” (Landy, 1994:50). These SHFs are what listeners use to try to understand and appreciate a particular work (Weale, 2006:189). Landy, after listening to many different E/A works, produced a framework of categories to classify ‘something to hold onto factors’. These categories were expanded on by Weale in the I/R project (Weale, 2006:192). One of the ‘something to hold on to factors’ that Weale identified (expanding on Landy’s original ideas) was for real world sounds and their source and location (Weale, 2006:193). Hence in this project, as in the I/R project, works were used that included real-world sounds.

Other composers such as Denis Smalley have remarked that electroacoustic composers too often fail to account for the needs of the listener: ‘it is disquieting to realize that music that is not perceptually viable is too frequently presented as if it were...Regrettably there is too much electroacoustic music that demonstrates a disdain for listeners’ indicative needs’ (Smalley, 1992:551).

Landy, by proposing categories by which the composer might be able to offer the listener a way into the music, was suggesting a way E/A composers might overcome this problem. By considering the listeners’ needs they might be offered ‘a helping hand’ which could result in greater accessibility (Landy, 1994:49). As the term access is sometimes equated with ‘dumbing down’ Landy stressed the aim was not to call for a simplification of E/A music ‘ but instead to strive for greater music appreciation’ (Landy, 1994:49).

Additionally Landy proposed that the concept of dramaturgy used in theatre could be applied to E/A music as another way to assist potential listeners. This has traditionally explained the ‘why’ of a production, meaning the choices made by those who are responsible for a production can be understood and put in context (Landy, 1994:51). The ‘what’ and the ‘how’ can also be included in this if they contribute to an understanding of what the work is trying to communicate and assist the listener in gaining access into the work. Weale further developed this concept in the I/R project (Weale, 2006:189).

1.1.3. Intention Reception Project

The Intention/Reception (I/R) project aimed to discover how accessible E/A music can be (Weale, 2006:189). It emerged from Landy's research into access and appreciation of E/A music and the fact that most of the audience for this music consists predominantly of E/A composers (Landy, 2005:29). It was 'an investigation of the relationship between composer intention and listener response in electroacoustic compositions' (Weale, 2006:189).

Listeners were asked to fill in questionnaires about interpretation and appreciation after repeated listening to pieces of E/A music. Responses from three groups of listeners – inexperienced, experienced and highly experienced - were analysed and compared. The composers also filled in questionnaires concerning their intent in terms of the pieces, with each playback more information was revealed to the listeners and their responses were monitored (Weale, 2006:189). One of the areas for future development of the research cited by Landy was to 'expand the quantity of data collected and broaden the demographics ... to investigate how far accessibility may be broadened' (Landy, 2005:50).

Weale developed and expanded Landy's concepts of dramaturgy in E/A music and the framework of SHFs (Weale, 2006:189). By analyzing response data from the separate listener groups 'a generalized schema of SHFs' was established (Weale, 2006:197). Weale proposed that this could be used by composers as information to understand how listeners might try to gain access but also by listeners as a 'general listening strategy for a particular work or corpus of works' (Ibid). However, Weale also hoped that the SHFs might be further expanded through future research (Weale, 2006:192). He describes dramaturgy as applied to E/A music in these terms:

'The dramaturgy of an E/A art work may therefore concern a composer's ideas, motivations, inspirations and aspirations as well as the development of these during the composition of the work. It includes, but is not limited to what a composer intends to communicate through the work" (Weale, 2006:190).

The study demonstrated that inexperienced listeners, when presented with three works of E/A music using real world sounds (with varying degrees of abstraction from Soundscape with little manipulation to a more abstract piece where the sounds were transformed beyond direct recognition (Weale, 2006:190)) could 'have an enjoyable and stimulating listening experience that they would like to repeat' (Weale, 2006:196). It also showed that dramaturgic information assisted listeners appreciation 'in problematic areas' (ibid).

Weale designed the I/R methodology as a template for future research. Since then the I/R methodology has been used elsewhere such as in Australia (Stead, 2009) and is currently being used by PhD student Andrew Hill at De Montfort University to examine intention and reception for E/A audio-visual works (Hill, 2010).

Leigh Landy also used the I/R methodology to carry out his own trials (Landy, 2005), which returned similar results to Weale's project (Weale, 2006:196). Landy concluded from the trial that the music covered by 'this project is much more accessible than is usually assumed.' (Landy, 2005:49). He also noted that data taken from this kind of project can influence composers by causing them 'not to change their style, but instead to reflect those aspects of electroacoustic composition that are received by the listener. This is a twenty-first-century means of criticism and art development' (Landy, 2005:50).

1.1.4. Triangulation - completing the intention/reception loop

In 1999 Leigh Landy produced an article in which he pleaded for greater triangulation within electroacoustic musicology. It was influenced by 'critical musicology' which challenges the traditional relationship between creator and receiver by asking questions, as in reception theory, such as 'Why is the maker more important than the taker?' (Landy, 1999:69). His hypothesis was based on the apparent isolation of much of the scholarship (and composition of E/A music) carried out by the E/A community from those outside of that community (Landy, 1999:63). His point was that much of the scholarship was carried out from the

perspective of people within the community (otherwise known in fields such as anthropology as an emic as opposed to an etic approach). The presence of such an insular attitude was echoed in the same year by Barry Truax who asked in his 'Letter to a 25 year old electroacoustic composer' when talking about the audience (or lack of) for electroacoustic music 'you cannot expect them to be interested in what seems to them to be your esoteric concerns. Ask yourself, instead, if what you are doing answers any of *their* concerns or life issues' (Truax, 1999:148). Similarly Bruce Pennycook when discussing the low audience figures for experimental music in the early nineties suggested part of the problem might be 'that contemporary composers are not speaking to anyone outside the institutions that shelter them and that modern musical discourse has become so insular and private that outsiders cannot hope to decode the messages' (Pennycook, 1992:561). It is an issue that is still relevant, as illustrated more recently by Katharine Norman who, when discussing how much consideration E/A composers give to the listener, asks, 'A main concern of artistic expression, surely, is to reach out and achieve some point of contact?' (Norman, 2010:117).

One approach Landy called for to remedy this was through a process of triangulation in research:

'In recent years, particularly in the field of education, the notion of 'action research', i.e. research which incorporates acquired feedback evaluation of one's own (creative) work throughout the creation of that work and afterwards, has grown in importance' (Landy, 1999:63).

Action research seeks to not just simply transfer knowledge to society for practical use (as with traditional research) but to develop this knowledge collaboratively with those who will be putting it to practical use. 'Research cannot aspire to solve problems *for* the practitioners but has to work *with* the practitioners' (Brulin, 2001:441). In contrast research in the electroacoustic community, according to Landy, was too often carried out alone or in small groups without much concern for potential application, resulting in the existence of an 'island mentality' and a lack of cohesion between different subject areas researched by that community (Landy, 1999:66).

Throughout the article he emphasizes triangulation, using an action research model, as a way to solve this problem. It 'allows information to flow between the maker and 'taker' allowing us to investigate whether that which is intended and received meet adequately' (Ibid:68). He argues that ethno-electroacoustic musicology could provide useful insights into developing this as in part it is concerned with the relationship between the music and wider society (Ibid:67) and 'demands that we look into people's responses to and perhaps expectations of this music outside of the electroacoustic community' (Ibid:68).

Landy was not suggesting that the research being carried out was of no value, rather that 'triangulation might contribute to debates concerning pertinence/ applicability of development, and furthermore that the intention/reception loop should be investigated where relevant' (Ibid:63).

Landy ends by describing an example given by Trevor Wishart at the 1994 International Computer Music Conference in Denmark. He played a piece as an example that many people there believed, due to it's inventiveness, had been made by a member of the E/A community. It had actually 'been made during a community residency with the elderly' (Ibid:69). Landy argues that this 'suggests access where it was assumed impossible, ... a group process when individuals think they must work in isolation, and triangulation as they all needed to make their adventure in sonic art work for each other' (Ibid). The 'moral' of this is that through triangulation and relevance in research greater access might be possible, meaning that scholarship and the music might reach a wider audience not only within the E/A community but outside it too (Ibid).

Despite the work of initiatives such as the Intention/Reception project it is still not clear that things have improved greatly since Landy first raised these issues. In 2008 Rob Weale conducted research in to the listening habits of E/A composers which found that many of them spend time composing far more than listening to other composers' work, and that they got far more pleasure from composing than listening (Weale, 2008:3). As Katharine Norman commented: 'A music for expert listeners only, listening to themselves as an end in itself' (Norman, 2010:117).

1.2. Listening Strategies in electroacoustic music

Listening in E/A music is often related to Pierre Schaeffer's 'Quatre Ecoutes' as described in the 'Traité des objets musicaux' (Schaeffer, 1966). These are four modes of listening –

- Mode 1 - 'Ecouter' – where the listener focuses on the cause and identity of the sound including any message or information it conveys (Smalley, 1992:516).
- Mode 2 - 'Ouïr' – this is listening passively, the listener can not help hearing the sound but does not attempt to interpret or pay any attention to it as with everyday background noise.
- Mode 3 - 'Entendre' – this is focusing on the intrinsic characteristics of the sound or what Schaeffer called 'reduced listening', any references or associations are ignored.
- Mode 4 - 'Comprendre' – this is when sound is used to convey a meaning or communicate such as through music, sound as a musical language.

(Barrett, 2007:234)

Listening strategies for E/A music are heavily influenced by mode 3 ('entendre'). In contrast to our usual listening habits, when engaging in reduced listening perception is stripped back to focus only on the sound itself, therefore the listener voluntarily ignores anything external to which it refers (EARS, n.d.). An alternate strategy is proposed by the members of the World Soundscape Project (WSP) who see 'listening as the crucial interface between the individual and an environment' (Truax, 2001:15). In soundscape theory sound is a carrier of information about the environment through which it travels as Truax explains: 'In a sense, the sound wave arriving at the ear is the analogue of the current state of the physical environment, because as the wave travels, it is changed by each interaction with the environment' (Ibid:17). Although vision gives more detail, hearing gives a 'more comprehensive, image of the entire environment in all directions at once'

(Ibid), this has parallels to how many blind people use sound to form maps of their surroundings.

Some composers who are not from the soundscape tradition also acknowledge the extrinsic as well as the intrinsic qualities of sounds rather than advocating pure reduced listening. Denis Smalley, whose influential theory of spectromorphology (which is concerned with how the spectral features of sound are shaped over time (Smalley, 1986:61)) is largely focused on intrinsic qualities, recognises that deliberately ignoring the sound's source as in 'reduced listening' can mean the range of usual musical experience is also reduced (Ibid:64). Other listening strategies such as Mark Taylor's 'heightened listening' (Landy, 1999:67) have also emerged. The following sections will explore these different approaches further.

1.2.1. Reduced listening and heightened listening

Difficulties with reduced listening for non- specialist listeners

There is a growing view among some composers that reduced listening is a strategy that might only be mastered by very specialist listeners. Denis Smalley argues that 'reduced listening' is difficult to learn and is only usually achieved through repeated listening by composers when working on their own pieces (Smalley, 1992:551). Similarly the composer Natasha Barrett's view is that it might only be something really ever experienced by E/A composers when working in the studio (Barrett, 2007:235). Luke Windsor also argues that, from an ecological perspective, reduced listening is 'far from realistic', and that listeners' attempts to attribute causes to sounds is an important part of musical interpretation (Windsor, 2000:9). Through the field of ecological acoustics he explains how sound directly connects an organism to its environment providing information that is necessary for its survival (Ibid:10). In this context the 'acousmatic curtain' can actually 'intensify our search for intelligible sources' (Ibid:31). Therefore, 'reduced listening' does not seem obvious as a listening strategy for inexperienced listeners

especially for pieces where sounds are used to communicate meaning, as has been argued by Landy (Landy, 2005:31).

Additionally recent neuroscientific research highlights the link between the senses particularly the relationship between the visual and auditory senses and as a result Smalley believes that acousmatic music can be a 'quasi-visual... experience' (Smalley, 2007:40). This is supported by research that has found that the visual cortex can be responsive to sound in blind people, meaning that they can experience visual sensations through sound (Gougoux et al, 2005). It seems therefore difficult to isolate hearing as a sense in order to engage completely in reduced listening, and trying to prevent images and associations coming to mind can actually reduce the range of musical experience in some contexts, as has been argued by Smalley (Smalley, 1986:64).

Heightened listening - an alternative strategy?

So if reduced listening is hard to achieve and, in the view of some, can sometimes restrict musical experience, how does heightened listening fit into E/A music as a listening strategy and would it be a more appropriate alternative for many listeners? Landy, after introducing Mark Taylor's concept of 'heightened listening', says that: 'I tend to agree that Taylor's view occurs quite often, perhaps even more for most listeners than what we understand to be Schaeffer's reduced listening strategy. Or are they perhaps talking about the same thing differently?' (Landy, 1999:67). Jonty Harrison uses the term 'expanded listening', which is similar to heightened listening. This enables reduced listening to be 'complemented by a wider frame of reference' when the sounds are recognisable (Harrison, 1996). It might be argued that heightened listening allows for switching between Schaeffer's mode 1 and mode 3 while listening to a given piece (depending on the sounds used) or even when listening to environmental sounds.

Smalley represents Schaeffer's mode one as the 'indicative relationship' (he prefers the term 'relationship' to 'mode' as it suggests impermanence) but he does not limit this 'to mere messages, events and information' but expands it to include a deep exploration of 'the relationship between musical experience and our experiences of living' (Smalley, 1992:520). This expanded idea of mode one has

parallels with heightened listening. Also, Smalley proposes that sounds have a dual potential, which he calls 'abstract' (the internal qualities of the sound) and 'concrete aspects' (external qualities such as outside links or associations). All sounds are balanced somewhere between the two but where this balance is depends on the listener (Smalley, 1986:64).

Additionally it might be suggested that the blind perceive both abstract and concrete aspects during everyday listening. For example John Hull (who lost his sight in 1980) said that some time after becoming blind he noticed the beauty of the sound of wind in the trees. He could tell the season by that sound as each season had a different quality, a different texture (Hull, 2001:11). He therefore appreciated the intrinsic abstract features of the sound but also used that to deduce the sound source. Similarly the HL project proposes it is possible for any listener with heightened listening skills to hear a sound's internal qualities but also recognise the source if that is apparent.

This is supported by the soundscape composer James O'Callaghan who argues 'we should not be persuaded to think that somehow being made aware of a sound's source prevents intense concentration toward its spectromorphological properties' and that 'referential capacities' do not need to be rejected in order to focus on other qualities (O'Callaghan, 2011:55). One or the other of these aspects might be more prominent depending on the context, but with heightened listening the listener will not actively negate either, unlike reduced listening. However, even with the most abstract pieces outside links can still be made by the imagination as suggested by Smalley's concept of 'surrogacy'. This encompasses different levels of the connection to source up to 'remote surrogacy' where the source is not known, but the listener might still 'be concerned with non-sounding extrinsic links' (Smalley, 1997:112). However, in part, this will depend on the personal associations of the listener, although composers can attempt to influence this through the title and dramaturgy.

The imagination also plays a role in heightened listening in making extrinsic links and creating associations. Suk-Jun Kim considers a listening process he calls 'acousmatic reasoning' (Kim, 2010:52). Within this he connects two types of

listening, spectromorphological listening (which he relates to the process of perceiving) and semiotic listening, which is related to the process of imagining. Kim argues 'that listening to electroacoustic music is as much an act of perceiving as of imagining. Good listeners are not only attentive to both acts of listening, but also balance their attention in accord with the piece they hear' (ibid). Likewise this can be related to Smalley's 'concrete or abstract aspects' where the focus of listening depends on the nature of the piece.

What these ideas (of a shifting emphasis from mode 1 to mode 3, the concrete to the abstract, the semiotic to spectromorphological) suggest is that heightened listening can be a flexible approach that allows source recognition, imaginative association and a close concentration on spectromorphological features to be encompassed within one listening strategy, with the balance of attention moving between these depending on the work.

Can heightened listening be accepted as a listening strategy or E/A music?

While some composers have become more flexible in adhering to strict reduced listening, 'there remains a strong foothold of the aesthetic which banishes real-world sound-identities as "non-musical"' (O'Callaghan, 2011:55). Francisco Lopez argues for what he calls 'profound listening' which is essentially the same as Schaeffer's reduced listening but he prefers this term as he feels 'reduced' implies a simplification (Lopez, 2001:85). Although he uses real world sounds and records real environments (such as his piece 'La Selva' which is a recording of a Costa Rican rainforest) he encourages listeners to focus on 'the inner world' of the sounds rather than a recognition of them (Lopez, 2001:85). For this reason he often does not use titles and asks audiences to wear blindfolds. Lopez was struck by the similarity of listening in a rain forest to the acousmatic situation as the sound sources are usually hidden (Cox and Warner, 2004:82).

However, when considering listening from an evolutionary angle, humans have developed to try and identify sound sources when in naturally occurring acousmatic situations as part of their survival because of the need to identify predators or prey (Wishart, 1996:129). As already mentioned the situation of the blind has also been compared to the acousmatic listening situation (Landy,

1999:67), but similarly this is due to practical need and identifying sound sources is a vital part of this. However this does not prevent blind people from appreciating the details of sounds (Hull, 2001:11), but as Hull emphasizes ‘there is *nothing* a blind person can do, that a sighted person can’t do’ (Ibid). For the HL project this appreciation of sounds’ inner qualities is an expected benefit of learning heightened listening skills for any listener. As described by Paul Rudy, ‘the beauty of sound is not only in its spectral qualities, but also in its recognition, ripe with associations’ (Rudy, 2007:12).

Since the latter part of the last century listening for the external features of sounds seems to have become more acceptable in the European acousmatic tradition. One can cite, for example, Wishart in ‘Sound symbols and landscapes’ where he explores how sounds can be used as metaphors (Wishart, 1986), Smalley in exploring ‘indicative relationships’ as explained above (Smalley, 1992:519), Emmerson in acknowledging that sounds have associations that it might not be possible to ignore (Emmerson, 1986:6) and Delalande when recognising ‘figurativisation’ as a listening behavior where the listener ‘tends to think that certain sounds evoke something that moves, ultimately living’ (Delalande, 1998:47) and consequently narratives and metaphors might be perceived. O’Callaghan notes that while much of traditional acousmatic music has not focused on “‘extra-musical’ elements, which hinder the somehow more refined process of *reduced listening*’, a significant amount of Smalley’s compositions focus on sound sources and their referential qualities, despite his work being largely acousmatic in character (O’Callaghan, 2011:54). These views suggest that heightened listening for works that use real world sounds could be a credible listening strategy even in a tradition where reduced listening has such a strong influence.

1.2.2. Listening and the experience of the blind or visually impaired

As explained in the introduction, ‘heightened listening’ is a skill Mark Taylor believes is shared by the visually impaired and E/A composers. As a reference point, the HL project aimed to investigate if blind or visually impaired subjects responded differently (due to their acute sonic awareness) to the test material,

than the school pupils participating in the heightened listening workshops. Soundscape research has previously explored the experience of the blind (for example Copeland, 2000:23) and what it might teach us in terms of our relationship with the acoustic environment. Descriptions of their experience were also introduced into the workshops for this project as a way of illustrating the acute sensitivity necessary for heightened listening.

John Hull, when speaking at the UKISC conference on Sound, Culture and Environments in 2001, talked about his experience after being blind for some time of waking up to the 'beauty of sound', noticing its details and sensing movement through it. After mourning the fact he would never see a tree again he rediscovered trees through sound, finding it 'infinitely fascinating' (Hull, 2001:11). John Hull has often been quoted within soundscape research (Copeland, 2000:23) as he explains how powerful the experience of sound can be and how this is heightened in the absence of the visual.

Many similarities can be drawn from this experience to listening acousmatically to music that uses real world sounds. Just as when listening to a soundscape composition, sound tells the blind person about place (Copeland, 2000:24) and the experience of the blind can reinforce arguments made by acoustic ecology. For example as the blind cannot close their ears noise becomes more than just annoying sound but 'the total occupation of one's consciousness from an unexpected, and certainly uninvited, external sound source' (Copeland, 2000:24). Copeland argues that sighted people experience the same immersion in sound as blind people but that they are just less sensitive to it (Copeland, 2000:24). As John Levack Drever states: background noises influence us, they are 'not a superfluous backdrop' (Drever, 2009:166)

Although Hull explains that blind people live in a world of sound and 'that sound is the blind person's equivalent to light' he also notes that blind people are very different from each other and their reactions vary (Hull, 2001:10).

Truax explains how, due to the ears' ability to spatialise, practiced listeners, such as blind people, can notice minute subtleties and discern the size of objects or even for example a door being open due to the lack of reflections (Truax, 2001:17).

To demonstrate the point Truax quotes French author Jacques Lusseyran who lost his sight as a child:

‘As I walked along a country road bordered by trees, I could point to each one of the trees by the road, even if they were not spaced at regular intervals. I knew whether the trees were straight and tall, carrying their branches as a body carries its head, or gathered into thickets and partly covering the ground around them’ (Lusseyran, 1963:32).

Truax also illustrates that such advanced listening skills can be developed by sighted people. He quotes an account of boat captains using whistles for echolocation (as used by bats) in order to tell their distance from the shore and the detailed information they could deduce from this through practice, such as whether the shoreline was rocky or sandy or even whether there were logs. This skill has been lost due to the modern use of radar (Truax, 2001:21). However it is a skill that is used by blind people and even enables them to take part in activities such as mountain biking (Psychology Today, 2009).

1.3. Soundscape theory and listening – a sense of place

The World Soundscape Project (WSP) was founded at the Simon Fraser University (SFU) in Vancouver in the early 1970s and although it intended above all to educate and archive, it also helped to develop ‘soundscape composition’ (Truax, 2002:5). The test material composed for the HL project was inspired in part by soundscape theory. In addition the philosophy of Murray Schafer and the work of the WSP in education has been a major influence on the teaching of listening skills for the purposes of the HL project. Furthermore the kind of aural awareness advocated by soundscape theory has much in common with heightened listening as defined in this project.

Truax explains that soundscape pieces can encourage listeners to concentrate on and explore sounds in more depth, hearing them differently than in everyday life (Truax, 2002:6). Similarly McCartney points out that Westerkamp

‘aims to sensitise listeners to the sounds of the environment around them, and to bring attention to small sounds that are often unnoticed’ often by amplifying them or juxtaposing them with processed versions (McCartney, 2002:45). This approach was employed by the HL project, which aimed to encourage participants to notice sounds around them and focus on them in more detail.

Westerkamp believes that listening itself is integral to soundscape composition, and that regular listening practice will benefit the composer by deepening the relationship with the acoustic environment (Westerkamp, 2002:53). Westerkamp underlines the role of listening in the success of such works:

‘The listener also plays a role in this process – i.e. how can the listener’s ears give birth to a piece? One can assume for audiences listening to such compositions that the experience of conscious soundscape listening in daily life would add significantly to the understanding of and involvement with a soundscape composition’ (Westerkamp 2002:56).

The process towards increased appreciation, as aimed for in the HL project, will surely be aided by providing tools to assist involvement with a work. Teaching that promotes the practice of listening to the environment, provides such a tool.

The piece created for the HL project (‘Night and day’) uses real world sounds that are abstracted in the middle section, however all of the sounds have a degree of connection to the real world. Truax suggests that one of the most notable characteristic of soundscape composition from SFU is that most of the pieces ‘can be placed on a continuum between what might be called “found sound” and “abstracted” approaches’ (Truax, 2002:6). This continuum can result in a diversity of works ranging from those which are analogous to real world experience ‘to those that mirror both nonlinear mental experiences of memory recall, dreams and free association, as well as artificial sonic constructs’ (Ibid:12). ‘Night and Day’ moves along this continuum throughout the piece.

‘Night and day’ also tries to evoke a ‘sense of place’ and a connection to the environment. Soundscape composition puts an emphasis on context or the

relationship between sounds and their environment, be that real or imagined. This is highlighted by the founders of WSP, such as Schafer (Schafer, 1977:275) and Westerkamp (Westerkamp, 1999). Capturing a 'sense of place' is often key to these types of works and practitioners such as Chris Watson make reference to this (Hollings, 2010:53). In many of their pieces composers such as Watson and Jacob Kirkegaard are not trying to capture the soundscape exactly as it is experienced by human beings, like a sonic photograph (Montgomery, 2009:146). They often show us by using technology (i.e. contact microphones, hydrophones) what we cannot hear (Ibid:161).

1.3.1. Murray Schafer - Tuning the World

A text that has much relevance for the HL project, particularly in the benefits of developing better listening skills, is Murray Schafer's 'The Soundscape – the Tuning of the World'. Central to his argument (and echoed by others in WSP, such as Truax in 'Acoustic Communication' (Truax, 2001)) is that human beings' listening abilities have deteriorated due the dominance of the visual in western culture since the Renaissance (Schafer, 1977:10). Likewise Wishart argues that the written word has long dominated communication and culture (Wishart, 1996:12), and that this has influenced music culture through a greater emphasis on works that could be clearly notated (Ibid:15). Before the spread of the written word hearing was more vital than sight, but concern over issues such as noise pollution shows that there is now a desire to regain 'clean hearing' (Schafer, 1977:11).

Schafer introduced the terms 'hi-fi' and 'lo-fi' for describing types of soundscapes. 'The hi-fi soundscape is one in which discrete sounds can be heard clearly because of the low ambient noise level. The country is generally more hi-fi than the city; night more than day; ancient times more than modern' (Schafer, 1977:43). When we lived in a more hi-fi rural environment our ears were more attuned to our surroundings – 'From the nearest details to the most distant horizon, the ears operated with seismographic delicacy' (Ibid:44). It is through education that Schafer suggested greater listening skills could be developed.

1.3.2. World Soundscape Project and education

The WSP's commitment to combine research, education and composition is one of the inspirations for the HL project. As described above the foundation of Schafer's philosophy was to note the dominance of the visual in society and that in his experience children's listening skills were deteriorating (Wrightson, 2001:10). Schafer argued passionately that listening skills should be part of the national curriculum (Wrightson, 2001:10). He argues it is only through an appreciation of the sounds of our environment that the soundscape can be improved and that education from a young age will play an important role in this: 'For many years I have been fighting for ear cleaning in schools to eliminate audiometry in factories. Clairaudience not ear muffs' (Schafer, 1977:4). 'Clairaudience' means 'clear hearing' which can be achieved by practicing 'ear cleaning' exercises (Ibid:272). This kind of appreciation of environmental sounds achieved through 'clairaudience' was promoted through the workshops of the HL project. The types of ear cleaning exercises, which were outlined by Schafer in a number of music education pamphlets and designed to make the listener focus on and notice the sounds around them, were a key part of the workshops.

Schafer's ideas on education are still very influential as evidenced by a themed edition of 'Soundscape: The Journal of Acoustic Ecology' in 2001. This included a number of examples where Schafer's techniques are still being used successfully in education. Michael Cumberland, a teacher in Canada, describes the value of these techniques in developing listening skills after using them with 11 to 14 year old age groups (Cumberland, 2001:16), which is also the age group focused on by the HL project.

In the same issue Robin McGinley outlined the Stockholm Soundscape Project, which was run for 15 year olds and encouraged them to keep 'sound journals' (McGinley, 2001:26). The general aim of this was to raise the students' awareness of their sound environments but also to offer a way into studying

‘difficult’ contemporary experimental and electroacoustic music. The idea was simply that by opening up the students’ ears to the sounds around them, they would be more willing to listen to these types of music: ‘if you can encourage people to listen to *everything*, they can listen to *anything*’ (McGinley, 2001:29).

These examples support the view that music education needs to have relevance in the daily life of students as advocated by those who propose a more praxial approach, such as Thomas Regelski. Regelski argues learning that is not used by students in relevant real life situations outside school or in the future has little value (Regelski, 1992:111). They also demonstrate that young people can connect with their acoustic environments in ways that give them a fresh perspective on the influence of sound in their lives. In turn this might then help them to engage with unfamiliar forms of music, as is the intention with the HL project.

To be successful it might be crucial that this kind of education happens at school rather than any later in life. As suggested by the ‘open earedness’ hypothesis (Hargreaves, 1982:51), openness to unconventional forms of music might decline with age, so introducing listening skills and new music at school age, before desensitized listening becomes habitual, would appear to be the most effective course of action in raising general sonic awareness.

1.3.3. Soundwalks

Schafer proposed sound walking as a useful way for introducing ear cleaning in schools (Schafer, 1977:213), and recordings of soundwalks in natural and urban environments were used in workshops for the HL project for this purpose. Hildegard Westerkamp describes soundwalks as ‘any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are’ (Westerkamp, 2001). Westerkamp used soundwalks as part of soundscape workshops whereby participants were asked to focus on particular aspects such as the sounds of the body, nearby sounds, the

quietest sounds or something specific such as the wind and how many different sounds it creates (Westerkamp, 2001). Schafer differentiated between two types:

Listening walk – this is simply a walk where the participants focus on listening in silence.

Soundwalk – this would explore the soundscape of a particular area and might also include ear cleaning exercises as well as sound making by the participants in order to explore the sounds of the environment and be aware of one's own sound. The participant becomes a 'composer-performer' (Schafer, 1977:213).

As Drever notes composers have long walked for inspiration – from Beethoven, Mahler, Satie to Cage. Cage's 4'33" brings 'fringe phenomena into the foreground' therefore 'becoming focal' (Drever, 2009:179). This is similar to Westerkamp's definition of soundwalking, which calls for close attention to the sounds around us in order that quieter sounds may not be missed (Westerkamp, 2001). It was through the WSP that soundwalking became fully established not only as a compositional tool but also a pedagogical one (Drever, 2009:188).

Soundwalk recordings were used as a way to communicate the WSP findings more widely, this was done particularly by Hildegard Westerkamp's soundwalk recordings for radio. Soundwalking is an activity that invites participation, can help us learn about our relationship with our environment or as Westerkamp points out 'can simply be fun' (Westerkamp, 2001). For these reasons it is an effective educational tool that was useful as part of the HL project. Most importantly it makes listening the priority providing 'a temporal and spatial frame for our ears to be open in the everyday, and open to the everyday, yet with a reverence of concert hall listening... a social art form that calls for active participation... and to quote Cage everyone is in the 'best seat'.' (Drever, 2009:192)

1.3.4. Memories, associations and the imagination

In contrast to reduced listening many composers connected to the soundscape tradition advocate a type of listening that uses the imagination through memories and associations triggered by sounds. Sound has powerful

properties in this regard. For example hearing sounds from the past can sometimes bring the whole 'context back to life' (Truax, 2001:29).

Heightened listening is also concerned with the use of memories and the imagination. The information the blind deduce from sound relies heavily on memory and stored experience, and the imagination is used for making mental maps or pictures from sound such as through echolocation (see section 1.2.1). This more sensitive listening enables hidden metaphors and associations to come into view (as expanded on below), and as Darren Copeland comments (Copeland, 1999:7) this is an area that has not been fully explored in E/A music and therefore could be a topic for further research (this is expanded on in 4.3.3).

Imagination – the inner world of listening

Norman uses the term 'referential listening' to describe the way in which we 'understand sounds as referring to objects and events' (Norman, 1996:2) and how we use memory to do this, but although 'real -world sounds are loaded towards referential listening' this doesn't mean that the imagination cannot play a part (Ibid:5). By using a more 'reflective listening,' such as when hearing 'the song of the sea' (Ibid), 'we use our ears and minds to create, or reinterpret, imagined meanings for the sound' (Ibid:6). This type of listening is a 'creative, enjoyable appraisal of the sound for its acoustic properties' (ibid:5). This appreciation of sound is something a heightened listening strategy could enable, by listening closely to the sounds acoustic properties it is possible to use the imagination to reinterpret it.

Some composers try to guide the listener towards this type of reflection, as in Westerkamp's 'Kits Beach Soundwalk'. Kolber highlights this as a piece where the listener is directed towards a more 'reflective listening' from a 'referential listening'. Westerkamp draws the listener to the tinkling and crackling of the barnacles as a way of shifting the listener's perspective from the source to the inner world of the sounds (or from a mimetic to a more aural discourse as in the terms introduced by Simon Emmerson (Emmerson, 1986:19)) and 'to stimulate the imagination' (Kolber, 2002:42).

Norman argues that we want to make sense of sounds according to our experience, 'to contextualise them. And, I contend, we retain this participatory activity in listening to real-world music' (Norman, 1996:9). This tendency to contextualise was evident in responses in the HL workshops (see Chapter 3 for results). It could be argued that the ability to contextualise them depends in part on the level of listening skill and that, in general, people who possess heightened listening skills (such as blind people) would be more able to do this at a deeper level (see section 1.2.1).

Norman believes 'that real-world music, like poetry, is impelled by a desire to invoke our internal 'flight' of imagination so that, through an imaginative listening to what is 'immanent in the real', we might discover what is immanent in us' (Ibid:26). Westerkamp supports the view of Norman that listening is a creative act and that real world compositions create 'a place of balance between inner and outer worlds, reality and imagination' (Westerkamp, 1999).

However, McCartney explains how listeners can react differently to this movement from an exterior to interior world by comparing reactions to 'Cricket Voice' by Westerkamp: 'For some, to "go inside" a sound, to move from a feeling of exteriority to one of interiority, can seem threatening and constraining... For others, this is a positive experience that can enhance movement from exteriority to interiority in their daily lives: for instance, many listeners spoke of Westerkamp's work as being meditative, indicating a movement towards a focused and clear internal state' (McCartney, 1999:187). McCartney argues differences in response can be due to listeners' different backgrounds and experiences (McCartney, 2002:45). Such fearful responses sometimes reference horror or Science Fiction films (in this case the 'Alien' films (ibid)) as was also evident in some of the responses in the HL project (see Chapter 3).

Associations and metaphors

Copeland suggests that the dominance of the visual in western culture as identified by Schafer and others, reinforces the lack of ability to articulate what is heard and associations that might arise (Copeland, 1999:6). This implies that improved sonic awareness might increase the number of possible associations.

However Norman acknowledges that articulation of these might still be difficult: 'there is no survey questionnaire that can solve the conundrum of how to obtain reliable written articulation of 'feeling', after that point when feeling overtakes verbalisation' (Norman, 2010:121). This is a common problem when describing music, which was encountered in the HL project (see Chapter 3), and John Sloboda acknowledges when describing his own listening: 'The principal end-product of my listening activity is a series of fleeting, largely uncommunicable mental images, feelings, memories, and anticipations' (Sloboda, 1994:151).

Copeland suggests that through a greater sensitivity to sound, hidden metaphors and information will become more evident and might be exploited by composers to create a vocabulary exploring the impact of how 'sound shapes people's experience in the world' (Copeland, 2000:25). However, as Windsor concludes, composers and listeners are not fully in control of what will be perceived (Windsor, 2000:31). Additionally the composer Michael Norris has said that the significance of individual interpretation is reinstated by E/A music, especially in works that use clear environmental source recordings. He argues:

'It is clear that electroacoustic music taps into our individual *sound contexts* in an unprecedented manner. These are defined by the sound environments we have been brought up with and our own personal associations we have with sounds. I call them *sociocultural sound narratives*, and as listeners we bring these with us into the concert hall, informing any listening experience' (Norris, 1999).

Even with heightened listening abilities differences in personal interpretation due to listeners' 'sociocultural sound narratives' indicate the difficulties for composers in exploiting the latent metaphors residing in sounds in the way Copeland advocates.

This section builds on the concept of heightened listening described in section 1.2.1. Through the ideas outlined above an expanded aural awareness is suggested, which allows shifts in focus from source recognition to the internal features of sounds while enabling a reflective listening where sounds can be

reinterpreted through the imagination and where metaphors might become apparent.

2. Developing the methodology

This chapter explains the process of designing a methodology to meet the aims of the research building on the contextual areas of importance identified in Chapter 1. The results of the research will be analysed in Chapter 3. As with the I/R project the research employed strategies from action research as well as qualitative and quantitative methods (Weale, 2005:91).

2.1. Designing the testing methodology

Using the I/R project as a template it was decided to use mainly qualitative questionnaires, which would be completed by the participants after listening to surround sound playbacks through multiple speakers. The purpose of using qualitative methods is that they allow listeners to express themselves. Quantitative methods can impose restrictions on participants resulting in the loss of potentially valuable data (Marshall and Rossman, 1999:54). However, as Denzin and Lincoln note, 'Lived experience cannot be studied directly', qualitative research does not give access into the inner psychology of a participant (Denzin and Lincoln, 2003:573). Additionally, as discussed in 1.3.4, it is not always easy to express verbally one's feelings about music. Below is an outline of the specific methodological issues to resolve arising from the main areas of study identified in the introduction:

- How to create a piece of E/A music for 5 channels suitable for the purposes of the project.
- The following workshop issues:
 - a) Teaching heightened listening skills to young people.
 - b) The design of questions to collect data from young people to assess the effectiveness of listening exercises.
 - c) The design of questions to collect data from young people to assess the impact on appreciation of the listening exercises.
 - d) Testing participants' responses to the reworked piece.

e) Playing the work in surround sound.

f) Collecting data from blind participants.

These issues and considerations are expanded on throughout the rest of this chapter.

2.1.1. Listener subject groups

The methodological framework was built around a research strategy that employed case study analysis using two separate groups:

Subject group

This consisted of young inexperienced listeners in secondary school between the ages of 11- 14 with no knowledge of E/A music and hence no established listening strategy for it. It was also thought that their music tastes might not be as ingrained as older listeners, as suggested by the ‘open earedness’ hypothesis (Hargreaves, 1982:51) explained in 1.3. However, music can play an important role in ‘identity’ for secondary school pupils, and this is usually tied up with pop or rock music (Hargreaves and Marshall, 2003:265). A short demographic section at the start of the first questionnaire gathered information about the respondents’ music tastes (as well as age and sex), to investigate if any patterns emerged in relation to this.

Reference group

A group of long-term blind/visually impaired people. In studies (at McGill University) comparing the listening skills of the blind with sighted people, the early blind group (blind since childhood) was significantly better at predicting the direction of pitch change and spatial listening than the sighted or later blind group (Gougoux et al, 2004).

If the HL hypothesis is correct then the reference group will have greater appreciation for the music due to their more advanced listening skills. Additionally the subject group’s appreciation should improve as their aural awareness

increases. To investigate this the results from the subject group were compared with the reference group.

Originally it was hoped to have a larger blind group who would act as a control group in the research. However problems arose in recruiting enough blind participants who could provide useful data. Workshops were conducted with the help of organisations who work with the blind (such as the RNIB and VISTA in Leicester) but many of the participants, who although often enjoyed the workshops and would be valuable subjects for further research, came from a wide range of age groups and abilities and therefore would not be directly comparable to the subject group. As a result, the data was treated as a reference point to the inexperienced listeners rather than a comparison between two groups.

2.1.2. Ethical issues

Any research involving human subjects particularly if they are young or vulnerable raises a number of ethical questions. De Montfort University requires that approval be obtained from the human research ethics committee where research involves gathering information about human beings through surveys, interviews, observation or questionnaires. For the HL project the ethical issues were identified as:

Anonymity - the identity of the participants should not be revealed without their consent.

Informed consent - participants should have clear information about the purpose of the research and what involvement will entail.

These issues were addressed by providing a letter for all participants explaining what the research would involve, its objectives and to gain written consent regarding their voluntary participation. It made clear that the research was anonymous and that their responses would only be used with their (or in the case of minors, their parents/guardians) permission. See Appendix 2 to view the letters and consent forms (one for the reference group and one for the subject group).

2.1.3. Teaching heightened listening skills

This centered on 'ear cleaning' exercises as designed by Murray Schafer (Schafer, 1977:208) and soundwalks as used in workshops by Hildegard Westerkamp (Westerkamp, 2001) as outlined in section 1.3.

Soundwalk

A soundwalk was recorded in both rural and city environments and recordings made in coastal locations were also used (see 2.2.4). After listening participants were asked to write down the sounds they could hear, thinking about the location and how close or far away they appeared. In the final tests this was used at the start of each workshop and was a popular exercise.

Ear cleaning exercise

A commonly used ear cleaning exercise is to ask participants to listen to the sounds around them, then to listen with earplugs in and finally listen to the room again (Sounds like Staten island, 2009). For the HL project students were asked to sit quietly, close their eyes and listen to what they could hear for 2 minutes. They then put their fingers in their ears for 1 minute and listened, following that they listened with just their eyes closed again for another 30 seconds. This aimed to change their perspective, so the listening became internalised. Removing the fingers from the ears then has the effect of making the external sounds seem clearer and a little more vibrant. Variations of this exercise were used in both workshops before the second and third listenings.

It is unrealistic to expect listeners to develop heightened skills comparable to the blind (which have been learnt over many years) from taking part in a workshop. The aim of such exercises is to reconnect participants with their sonic environment in the hope that this will provide a means of access to sound based music. It was intended, as with 'Action Learning' (influenced by Action Research), that students would benefit from the learning and that it would have a practical use in their everyday lives (Regelski, 1992:111).

2.2. Composing the test material

Unlike the I/R project, material was composed specifically for use in the HL project. This provided inside knowledge of composer intention but was also necessary in order to rework the piece through the triangulation process. Due to the number of workshops with different groups the piece went through many iterations. This meant it developed with each group, as it was altered based on case study feedback from each school in turn, thereby avoiding the complication of group differences due to variables such as the listening situation.

As spatial awareness is an important aspect of heightened listening the piece was also mixed in surround sound to explore this further. Sounds were placed in five different speakers positioned at the front and rear of the room, and where appropriate they were panned between the speakers (see section 2.3.1). The original and final 5 channel versions of the piece are included on the accompanying disc as well as stereo and binaural versions.

It was initially intended to produce two works, one a soundscape piece and one more abstract, however due to time restrictions in the workshops it was not possible to test two pieces. Therefore it was necessary to compose a piece that would contain aspects of both. A soundscape section was created with the intention of investigating participants' 'sense of place', as described in 1.3. The real world sounds were transformed as the piece progressed to explore how participants would respond to sounds further abstracted from their origin. The piece falls into the category that Rob Weale calls 'soundscape with sonic abstraction' (Weale, 2006:190).

Additionally it was important for the purposes of the project to produce a piece that would not be too difficult for young inexperienced listeners to understand or appreciate. A common 'something to hold onto factor' (SHF) discovered in the I/R project was recognition of real world sounds (Weale, 2006:195). Heightened listening, as defined in chapter 1, acknowledges our impulse to search for the source and this is also an important part of the advanced

everyday listening of the blind. Therefore a completely abstract piece seemed unsuitable as test material.

2.2.1. The structure of 'Night and Day'

The piece was structured in three parts. The first is a recording of nature at night in the Tuscan countryside. It principally features frogs around a pond but also includes insects such as crickets. Water sounds were introduced in later versions. The sounds are connected to the place and are intended to evoke a feeling of 'being there'. The frogs are very much in the foreground, but the perspective is designed to place the listener in the centre, almost in the pond surrounded by the frogs and hearing them on their level. This section is inspired by soundscape theory as discussed in 1.3. As with soundscape composition the sounds relationship to their context is fundamental. The listener is invited to reinterpret sounds that they might have encountered in everyday listening by hearing them amplified and from an unusual perspective.

Only small amounts of processing were used in this section, although the sounds have been edited and arranged in an attempt to evoke the composer's perception of the place and present the sounds in more detail. However, it is not attempting to accurately reproduce the reality of that particular acoustic environment. As Katharine Norman argues real-world music provides an imaginative experience which while not realistic can give us a new perspective on reality (Norman, 1996:19). The sounds of the crickets are continuous but placed further in the background, although it is their rhythms that provide the transition to the next section.

For the middle section the sounds were altered and transformed with the intention of creating an imaginary landscape. The rhythms of the crickets give way to mechanical rhythms that become engine sounds and dominate the first part of this section. Following this, in the later versions slowed down bird sounds producing voice like timbres (or similar to animal calls) are used alongside spectrally altered frog sounds, which have also been speeded up and slowed down.

The intention here was to encourage listeners to engage in an imaginative listening and hear some of the sounds from the first section differently. This was a similar approach to the one used by Hildegard Westerkamp in 'Kits Beach Soundwalk' (as discussed in 1.3.4) where listeners are invited to listen to the internal sound of the barnacles after first hearing them in context.

The middle section ends with a large crescendo that acts as a bridge to the final section, which uses recordings of the dawn chorus. These sounds of bird song, as with the first section, are presented virtually unprocessed. The intention was that by drawing the listener to the interior world of the sounds and encouraging a more imaginative listening in the middle section, they might perceive relatively unaltered sounds from the everyday differently in the final section.

The piece itself was used as a tool to raise aural awareness, which is something that many soundscape composers try to do in their work through drawing attention to the sounds around us. Using Norman's terms (as explained in 1.3.4) the piece encourages referential listening in the first and final sections with a more reflective listening in the middle section. As the sounds become abstracted it encourages a listening that is more focused on spectromorphological aspects than the source. The piece is therefore intended to assist in the development of heightened listening as described at the end of 1.3.4.

2.2.2. Composer Intention information

As with the I/R project the composer intentions were outlined so that they might be compared with participants' responses to investigate if the composer's intentions were being received. The participants were provided with the information before the second listening to see how this influenced their reception of the piece. The narrative had to make sense to the age group so, as well as providing an environmental context for the sounds, it needed to be explained in simple language. See Appendix 3 for a copy of the composer intention information. It was also necessary to identify some of the key sounds such as the frogs, which might not have been obvious to some listeners. The information was read out

before the second listening and a brief explanation was given of how this information related to the different sections of the piece. Any questions that then arose were answered.

The piece was altered before each second session and the changes were outlined prior to the third listening (see section 2.2.3 and 2.3.1). These alterations were generally made in order to communicate the composer intentions more effectively and were explained in reference to the intention information. The changes made throughout the beta tests are described in 2.4 and those made in the main tests are explained in Chapter 3.

2.2.3. An iterative process through triangulation

One of the key inspirations for the HL project was the need for greater triangulation in E/A music research as discussed in 1.1.4. This was integrated into the project by reworking the piece over two workshops (as described in 2.3.1) based on the responses from the first two questionnaires. This resulted in some fundamental changes to the work, including shortening the length from approximately six minutes in the beta tests to four minutes for the final test. It still kept a fundamental structure with three sections as described in 2.2.1, although the transformative middle part developed most noticeably and the final section became quite short (the first and final iterations are both included on the disc). The purpose was to explore whether through such a process access improved as with each new group the reworked version from the previous workshop was presented.

2.2.4. Structuring the soundwalk

Rather than take the participants on a soundwalk, which would have been difficult to organise in the time available within the workshops, soundwalk recordings were presented at the start of each session (these are included on the disc). The soundwalk used in the first session included a recording of a walk in the countryside near Leamington Spa featuring the sound of running water followed

by the sounds of Leicester market. This encouraged listeners to focus on the sound of water in the first section and then try to explore a number of more diverse sounds in the second section, thereby engaging in two types of attentive listening but each with a different focus. Ear cleaning exercises often encourage these two approaches – either focusing on a particular sound or listening out for all the separate sounds within a particular environment. As with “Night and Day” it was mixed for five channels and played back with the speakers placed as shown in 2.3.1.

The recordings used in the second session were of three separate coastal locations. The first was a recording of a rocky cove on the island of Elba near Italy, the second was a recording of the pebbly beach at Durdle Door in Dorset and the third was a recording made in a sea cave on the Island of Staffa off the west coast of Scotland. Short excerpts of each were played and the listeners were asked to write down the type of location they thought the recordings originated from. This was presented in relation to the heightened listening of the blind and how they form mental maps by listening closely to the sounds around them.

Following this there was a short demonstration of how these sounds might be perceived differently by filtering out certain frequency bands using low pass and high pass filters. Again this was to encourage a closer concentration on the internal details of the sounds and what might be learnt from these through heightened listening. As when John Hull describes listening to the rain in a garden, sound can provide detailed information about the surrounding environment if the listener is practiced (Hull, 1990:22).

2.3. Designing the workshops and questionnaires

The questionnaires from the I/R project were used as templates but simplified for the younger age group. Participants were asked to write down anything pertinent noticed during their first listening, this fulfilled a similar function to the Real-time Questionnaire (RTQ) used in the I/R project. However for the HL project this was mainly to assist the participants’ memories in

completing the questionnaires after each listening. Remembering accurately a sequence of events in any music can be difficult, even if the listener is immersed in the experience. As John Sloboda explains, the problem of examining listening processes is in being able to record the ‘moment-to-moment history of mental involvement with the music’ (Sloboda, 1994:153). Note taking during playback was intended to help with this difficulty but without distracting from listening, which was always stressed as the main focus.

Over the two workshops (for the subject group) there were three questionnaires designed to solicit more detailed responses after each listening. These were similar to the Directed Questionnaire (DQ) used in the I/R project. The three questionnaires sought to investigate:

- The level of engagement with the piece without contextual information.
- The influence of the listening exercises on the level of engagement.
- The influence of the title and dramaturgic information on appreciation.
- The effect of reworking the piece on the level of engagement.
- The degree that access might be influenced by all of these factors.

2.3.1. Workshop structures

The workshop structure went through a number of revisions during the beta tests (see section 2.4), below is an outline of the final structure used in the main tests.

First session (approximately 1 hour long)

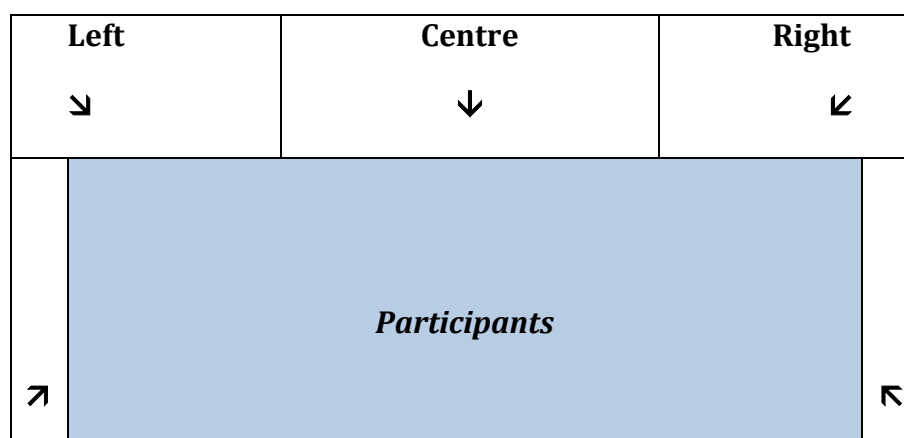
- Brief introduction and outline of what the workshops involve.
- Listen to a recording of a soundwalk in surround sound.
- Overview of heightened listening, electroacoustic music and the aims of the research.
- Short examples of established electroacoustic pieces played.

- Questionnaires read before each listening so the participants know what to listen for.
- First listening to piece in surround sound.
- Complete first questionnaire.
- Ear-cleaning exercise as described 2.1.3.
- Participants given information about what the composer intended to communicate through the composition.
- Piece listened to again with eyes closed, lights dimmed.
- Complete second questionnaire.
- Questions and discussion.

Second session (approximately 40 minutes long)

- Short listening exercise to warm up (such as listening to one's breath and then gradually widening awareness listening to the sounds in the room and then the sounds from outside).
- Second soundwalk exercise as described in 2.2.4
- Demonstration of changes made to the piece based on case study feedback by playing examples before and after reworking.
- Listen to the recomposed piece with eyes closed and lights dimmed.
- Complete third questionnaire.
- Further opportunity for questions and discussion

The pieces were played back through five speakers placed around the room as below:



Rear left		Rear right

Participants were encouraged to sit as near to the middle of the room as possible, but this was sometimes difficult due to class size and the available space. This means that some listeners had different listening perspectives, but this is a common experience at E/A concerts. For the second and third playback the participants listened with their eyes closed, a practice that had been established in the ear cleaning exercises in order to focus attention on listening as the dominant sense.

2.3.2. The three questionnaires (1Q, 2Q, 3Q) used in schools

The questionnaires went through a series of revisions based on issues that arose in the beta tests. These changes are explained in section 2.4. Below (in *italics*) are the questions used in the final tests, followed by a rationale for each (the full questionnaires can be viewed in the Appendix 1). Some of the questions were adapted or taken from the I/R project.

After First Listening (1Q)

These questions tested appreciation after listening to the soundwalk and being given an introduction to heightened listening, the experience of the blind and E/A music in general.

Q1) Which sounds did you recognise in the composition?

This question built on the soundwalk exercise where participants were asked to write down what they heard (as described in 2.1.3). It concerns perceived sound sources and the external links such as images and associations that are brought to mind. As with the I/R project it could also be used to discover whether there is a correlation between the sounds recognised by listeners and appreciation (Weale, 2005:115).

Q2) Did you notice any of the sounds coming from different parts of the room? Can you describe which?

This question concerns spatial awareness to investigate whether greater acuity in these areas results in greater engagement with the music.

Q3) What parts did you find most interesting?

Q4) What parts did you find least interesting?

These questions were particularly important for the triangulation process as it identified which elements were making sense to the participants and which were creating difficulties.

Q5) Overall did the composition make you want to keep listening or was it uninteresting?

Can you please explain why?

This is a key question for investigating the influence of the listening exercises on appreciation and access.

Q6) Would you like to listen to some sound-based music again in the future?

If yes, why? If no, why not?

This concerns access in general to E/A music. Heightened listening skills could only be said to be successful as an access tool if the participants want to hear more E/A music in the future.

After 2nd Listening (2Q)

After engaging in further listening exercises and being provided with contextual information (title and dramaturgy), participants were asked to complete the second questionnaire.

Q1) Please describe anything new you noticed by listening a second time.

This tested whether repeated listening and raised sonic awareness through taking part in the workshop resulted in hearing the piece differently.

Q2) Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)? If so, what kind of place?

This investigated whether listeners perceived a 'sense of place' in the piece, which can only be perceived as a result of concentrated listening. The language in this question was simplified, as in its previous version some participants in the beta tests had not understood it.

Q3) Did the title and information from the composer help you to understand the composition?

If yes, how? If no, why not?

This tested the effect of introducing the dramaturgic information in aiding access to the work.

Q4) After doing the listening exercises and listening to the piece again, did you find it (please circle) –

A – More interesting

B – Slightly more interesting

C – No difference

D – Less interesting

If less or more, why do you think that was? If no difference, why do you think your opinion hasn't changed?

This question is concerned with the effect of the extra listening exercises and dramaturgy on the participants' appreciation. While the first part uses a quantitative method giving a choice of A/B/C/D, the second part gives listeners' an opportunity to explain the reasons for their answer, thereby providing measurable statistical data that is then expanded by more detailed elucidation.

After 3rd listening (3Q)

Finally, below are the questions asked in the second session after the piece was reworked.

Q1) What differences did you notice from last time you heard the composition?

As the third listening was either a week or two weeks after the previous workshop, the key differences in the piece were explained. This question aimed to test if these changes were noticed when listening, and whether any other differences or additional details were perceived.

Q2) Did you find it (please circle) –

A – More interesting

B – Slightly more interesting

C – No difference

D – Less interesting

If less or more do you what changed your view? If no difference why do you think that was?

This question concerned the effect of triangulation on appreciation.

Q3) Do you think the listening exercises in each session have helped you to listen more closely to the sounds? Y/N (please circle).

If yes, how did this affect how you felt about the composition?

If no, why do you think they didn't help?

This question is fundamental to the HL project in testing the effectiveness of teaching heightened listening skills.

Q4) Now you have completed the workshops and done the listening exercises, would you like to listen to some sound based music again in the future?

If yes, why? If no, why not?

This essentially repeated the question asked after the first listening. The purpose was to investigate the overall effect of the workshops on access.

2.3.3. Differences in structure for visually impaired participants

For the purposes of consistency in the research and to have comparable result sets, the questionnaires and workshops needed to be as similar as possible for each group. As the visually impaired / blind participants were acting as a reference point to the main subject group, they were not part of the process of triangulation so therefore a second workshop was not necessary. Additionally as this group were expected to already possess a high level of aural awareness they did not take part in ear cleaning exercises. However, they did listen to the soundwalk in order to observe if, due to their heightened listening skills, they responded differently than the subject group. This meant the two questionnaires were exactly the same apart from any references to the listening exercises.

It was also necessary to find a means for collecting the blind participants' data. Teaching assistants or carers did this at each session by reading out the questions and writing down the responses. As a method for collecting data this presents issues in terms of accuracy and any bias of the interviewer influencing responses. Helpers were instructed to only ask the questions as written and record accurately the responses without influencing the participant in any way. The discussions during workshops often provided some of the most interesting data from the blind participants.

2.3.4. Collecting anecdotal data through discussion and conversation

One useful method of collecting extra data that emerged in the pilot tests in the I/R project was through discussions that took place at the end of testing sessions (Weale, 2006:191). It was found that listeners often gave more expression to their interpretations of the music in these discussions than in their written responses (ibid). These were encouraged in the HL project throughout the workshops as a valuable tool for gaining extra insights into the experience of the participants. The success of such discussions usually depended on the level of the engagement of the particular group with the workshop. Although participants were made aware before hand that the workshops would be recorded, the microphone, which was placed in the corner of the room for the entire session, was largely ignored and did not appear to have any effect on their willingness to speak.

2.4. Beta tests

Once the methodology was created, it was necessary to run beta tests before embarking on full testing. An action research model, which allows triangulation, was central to the HL project methodology. Fundamental to this is that research that aspires to be applicable must be developed jointly with participants for whom the findings might be of use (Brulin, 2001:441). Overall 54 participants took part in the Beta tests, while 81 pupils took part in the main tests in schools. Through this interactive approach suggestions from participants (and teachers) in the beta tests were encouraged for ways in which the workshops might be improved.

2.4.1. First beta test

The first test was run at a community centre in Leamington and was promoted to local young people, although any inexperienced listeners were welcome. The piece was played twice with a questionnaire after each playback and

listening exercises in between. For this workshop a third exercise that aimed to focus attention on particular sounds qualities was included. Participants were split into pairs, each of the pair was required to make a sound using various materials such as paper or foil and then the other attempted to imitate it. The composer information was read out before the second listening and participants were asked to give feedback on the questions and exercises at the end.

Results

Fifteen people completed the workshop and they were all inexperienced listeners with little knowledge of E/A music. The younger listeners needed assistance to answer and understand some of the questions.

The following age groups took part:

AGE	Number of Participants
10	1
11	3
15	2
16	1
25-35	4
35-45	2
45-55	2

The overwhelming response was that some of the questions were difficult to answer especially for a younger audience. It was unfortunate that there were not more respondents within the target 11-14 age group. However there were some questions that everyone struggled with particularly in connection with movement and spatial awareness. The workshop lasted over an hour and many listeners found it difficult to focus for this length of time without becoming distracted. However despite the problems the overall response was positive to the piece, soundwalk and other exercises.

As a result of these issues it was decided it was necessary to do further beta tests, but this time within a school as this was the only way to guarantee the

participation of the target age group. For the next test the language was simplified and made more concise so as to be easily understandable for children, for example words such as 'engaging' were changed for 'interesting'. Also the questions concerning spatial awareness and movement were made clearer or removed. Some of these had not provided any extra detail and many of the participants felt they were asking the same thing. The number of questions was reduced from 14 to 11 on the first questionnaire and 8 to 5 on the second (see Appendix 6 for details).

The piece was also felt to be problematic, as at this point it did not include much movement around the space, which was another reason why the listeners found questions concerning this difficult to answer. This was further improved before the next test, thus the process of triangulation was begun for creative practice, as well as for improving the methodology, from this early stage.

Additionally the third exercise was removed due to the limited time and the fact that many of the participants had appeared overloaded through so much being included in one session. This exercise was chosen for removal because, although potentially useful in certain circumstances, it was difficult to organise in one room with 15 people all making sounds at once.

2.4.2. Abington High

The next beta test was held at a state school in Leicestershire with a group of eighteen 13-14 year olds. This included both sessions, with the dramaturgy introduced in the second session (a week after the first) after the piece had been reworked. The first version used at Abington is included on the disc as this is where the formal triangulation process began. In the first session the piece was played at the start and followed by the first questionnaire. The soundwalk was moved to before the ear cleaning exercise as it was felt (as noted by Schafer – see 1.3) that this would be effective in laying the foundation for ear cleaning. For most of the session (about 50 minutes) the class concentrated well, but despite the changes, when the time came for completing the second questionnaire, they were noticeably more restless. As a result, responses were more positive in the first

questionnaire. It is evident from analysing the data that less effort was made in completing the second questionnaire. One participant was heard saying to his friends as he was leaving that he answered 'no difference' or 'no' on the second questionnaire, as that meant less writing was required. Looking at the number of negative responses on the second questionnaire it seems possible that some of the other participants did the same. At this point 'no difference' or 'no' responses did not ask for any further explanation, this was altered before the next sessions.

Overall the results were disappointing especially with the lack of detail given in responses, many of the answers on the second questionnaire were only one or two words. It seemed clear that too much was still being included in one session especially for this age group and the second questionnaire was further shortened (see Appendix 6 for details).

It was difficult to make constructive changes to the piece based on the sparse data from the first questionnaire. It seemed that some of the nature sounds (such as crickets, birds and frogs) were not well received, so changes were made to try to embed these within the piece more naturally and create a convincing sense of place. A number of comments were made in the first session about it being too loud in parts, so compression was added to control this.

Overall, as with the first session, the results in the second workshop were mixed. Half the class found the composer information helpful, while nearly 40% said it made little difference. As a result this information was shortened and further simplified to make it easier to understand for the age group. While half the group said recomposing made no difference to their appreciation, nearly 40% said it made it more interesting.

It appeared difficult for participants to remember the original piece in enough detail, a week after hearing it, to notice the subsequent changes, especially as some of these were relatively subtle. Therefore it was decided that in future tests excerpts should be played before the third listening showing examples before and after reworking.

Another issue that was apparent in these sessions was how peer pressure and other factors potentially influence results. The restlessness of some of the group seemed to spread and distract others. Some of the participants were talking while completing the forms, thereby sharing information that could have influenced their responses. From this point on it was stressed that questionnaires should be completed alone without consultation with other participants.

2.4.3. Myton School

Shortly after these initial beta tests another opportunity arose to run some sessions in a state school near Warwick with an A level Sociology class of 16/17 year olds. It was thought these could provide additional data that might be compared to the younger group. Changes were obviously still necessary after the problems encountered at Abington High. It was decided to shorten the soundwalk (to 3-4 minutes) and move it to the start of the workshop after the brief introduction. The overview of heightened listening and E/A music was also presented before the first listening so as to introduce the group to the concepts at an earlier stage. As a result the exercises were spread out meaning that the hypothesis concerning heightened listening and its influence on listeners could be explored in all three questionnaires, rather than just the second and third questionnaires when participants were more likely to be tired. Further small changes were also made to the piece to try to make it more accessible, for example by shortening it in the middle section by removing a pitched drone that grew in amplitude. This added to the coherence of the piece, as it did not relate clearly to the composer intentions. Additionally extra animal sounds, which had been altered as described in 2.2.1, were introduced at this stage in the middle section in order to encourage a more reflective listening.

However the results from this group were very negative. They were distracted and restless throughout each session. Nearly 80% said they would not like to listen to anything similar in the future. However, 80% of them said that the listening exercises had helped them to listen more closely to the sounds. The results suggested that issues with the piece itself or other elements of the

workshop meant that engagement with the listening exercises was not translating into greater appreciation of the music. The fact they were an older group, studying sociology rather than music, might also have influenced the results. Andra McCartney discovered in her research that listeners from various groups (such as a group from a Women's Studies class and a group studying ethnomusicology) responded differently influenced by the subjects they were studying (McCartney, 1999:205). However, it is not clear why a sociology group should react so negatively, but with such a small sample it is difficult to draw conclusions.

As with Abington High other factors might well have had an influence. These tests were held at 9am and it might have been that some of the participants were not ready to be introduced to unusual and unfamiliar sounds (some of which were quite loud) at that time of day. Another factor is that the acoustics of all three of the rooms used for each beta test affected the piece differently. This was a variable that was difficult to control (other than by making adjustments to suit each room, but there was usually only time for a quick sound check) and might have influenced some of the results through the whole project.

2.4.4. Revisions to workshop structure and questionnaires for final tests

Before embarking on the main tests it was evident, following the results from Myton, that some further reassessments and revisions were necessary. A trial test was run with a 14 year old listener who did have some experience of E/A music, in order to trial the reworked piece with the target age group (rather than the 16/17 year olds). This listener felt that she was being asked to remember too much detail for answering the questions after the first listening. However she felt the piece was appropriate for children due to the recognisable sound sources. The questionnaires and structure were then reworked a final time.

The number of questions was further reduced to keep the focus directed on listening and to reduce the amount of detail required. This resulted in only six questions remaining in the first questionnaire, with four on each of the others (see Appendix 6). The decision was made to introduce the dramaturgic information and

title before the second listening rather than in the second workshop. This meant the second questionnaire was testing the influence of dramaturgy and repeated listening on appreciation. The final questionnaire was now concerned with the effect of reworking the piece and all the questionnaires were testing the impact of the different listening exercises. Also to aid participants the questions would be read out before each listening so they knew the aspects they were listening for.

One final important change was the introduction of examples of E/A music by recognised composers. These examples were short excerpts, played with the intention of introducing a small sample of sound based compositions before listening to the main piece. It was hoped this would reduce the influence of the unfamiliar nature of E/A music on responses to the test material. These were inserted after the soundwalk and overview of heightened listening and E/A music but before the first listening. Some more accessible E/A examples by recognised composers were chosen, these were:

- Francis Dhomont – ‘Chambre d’enfants’
- Natasha Barrett - ‘Open Ocean’
- Hildegard Westerkamp – ‘Cricket Voice’ / ‘Kits Beach Soundwalk’ (KBS)

Each of these pieces contain the use of rhythms, pitched sounds or in the case of KBS a narrator to lead the way. This provided something familiar that might link with participants’ current concept of music. After hearing these examples, a piece that contained little use of rhythm or pitch might not seem such a big step. It was hoped that these would provide a bridge, or at least make the participants more open to the idea of E/A music that did not contain these familiar elements.

In the I/R project the word ‘music’ was changed to composition as some participants found it difficult to accept the test pieces as music and their responses were influenced by this (Weale, 2005:96). In the context of the HL workshops it was difficult to avoid the word ‘music’ completely, but as with the I/R project the research was not concerned with whether E/A works are music. So as a result ‘Night and Day’ was always referred to as a composition or piece. Additionally alternative labels were offered such as sound art or sonic art and if the word music

was used in relation to E/A works it was done so with the phrase 'sound-based' before it. Leigh Landy created this as an umbrella term to incorporate the wide variety of connected genres where sound is the basic unit, rather than the musical note (Landy, 2007:17). This seems a clearer term to use for those not familiar with the term electroacoustic.

3. Analysis of results

This chapter examines the results from the four schools that took part in the final tests. The same format and questionnaires were used with each school after the revisions, outlined in Chapter 2, had been made during the beta test phase. The results from each school are analysed chronologically in the sections below. The decision to analyse each group in turn was due to the various listening situations and as each group were presented with different iterations of the piece. The exceptions to this are Trinity and Leicester High whose workshops coincided in the same weeks. Therefore feedback from both these groups was analysed together in order to rework the piece for the second sessions. However the results from the two groups have been analysed separately in this chapter, as the listening conditions were quite different (see 3.2 and 3.3). Each respondent has been given a number followed by the school initials in order to identify participants, for example respondent 1 from Leicester Grammar is R1LG. Tables and graphs relating to the questions are shown in Appendix 4, while participant comments can be seen in Appendix 5 and the full questionnaires are in Appendix 1.

Following analysis of the school groups the data from blind and visually impaired participants is analysed in 3.5 in reference to the main tests. Chapter 4 contains an evaluation of the overall results.

3.1. Leicester Grammar

This is a mixed private school outside Leicester. There were 23 Year 8 (12/13 year olds) pupils in this group in the first session. They asked more questions than the previous groups and were interested in what the sounds were, where they were recorded or how they were created.

3.1.1. Responses to first questionnaire (1Q) – testing the influence of initial listening exercises.

The first listening happened after the soundwalk exercise, some short examples of E/A music and some discussion on the idea of heightened listening and the experience of the blind.

Q11Q - Which sounds did you recognise in the composition?

A wide variety of sounds were identified in the responses to Q11Q, as shown in Table 3.1 in Appendix 4, and improved on the numbers recognised in the beta tests. This asked which sounds were recognised in the composition and the imagination of the listeners clearly played an important role in their answers, as a number of the sounds identified are not the original sources. The imaginative aspect is especially evident in responses for UFOs and ghosts. This might partly explain the high percentage of responses including rats and bats (see Figure 3.1, Appendix 4) as neither of these were recorded or even imitated for the piece; it could be that imaginative associations with horror are playing a part. The most common response was for helicopter or planes (96%), and while these were not recorded as material, the original sound sources had been transformed into mechanical type sounds (see Chapter 2).

Q21Q - Did you notice any of the sounds coming from different parts of the room?

All participants (except one who did not answer this question) said they noticed the sounds coming from different parts of the room. Again these responses were far more detailed than the answers to this question in the beta tests.

Many of the responses were fairly general, for example as shown in Figure 3.2 the most common theme was identifying sounds as either being at the front or the back, such as comment 1/3.1.1 from R14LG in Appendix 5. However, as can be seen in comment 2/3.1.1, R5LG was more specific by identifying particular speakers. This comment is not actually more accurate than the first example

because the birds came from all the speakers, although more strongly from the front. Answers will depend on where the listener was sitting so this does not necessarily show greater listening acuity. Nevertheless, it could suggest a greater spatial awareness in noticing that different sounds were originating from particular speakers especially if, in this example, the listener was sat near the left speaker.

The perception of being surrounded by sound resulted in a sense of place for one listener (R3LG comment 3/3.1.1, even though was not necessarily the place the composer was intending to evoke – at least in the initial section). Four listeners mentioned movement, as demonstrated by comment 4/3.1.1 from R9LG. There were 7 respondents who mentioned planes or helicopters coming from all round the room but without mentioning movement or anything more specific.

Q31Q - What parts did you find most interesting?

As shown in Table 3.2 the helicopter sounds were mentioned the most frequently as the most interesting followed by a general reference to the loud parts and middle section. It seems likely that the loud middle section might also refer to the helicopter machine sounds as these occur near the middle and are one of the loudest parts. There was evidence of close attention in some of these answers such as R2LG (comment 5/3.1.1). For R12LG the parts that were perceived as scary triggered the imagination and were more interesting (comment 6/3.1.1).

Similarly, as shown in comment 7/3.1.1, R17LG referenced UFOs. This links to Andra McCartney's research (McCartney, 2002:45) where listeners made science fiction references because of connections made with sounds used in films as discussed in section 1.3. This was also a recurring theme in the HL workshops and shows how listeners' interpretations can be influenced by their experiences and cultural factors.

Q41Q - What parts did you find least interesting?

Table 3.3 show that the sections that were largely unprocessed were found to be least interesting. There were 4 mentions of crickets and frogs, which were most prominent in the first section, meaning a clear majority found these sections the most difficult. This suggested that these sections were not really evoking the fascinating sense of place that was intended and so indicated which parts required alteration. Two responses said they found these parts repetitive, while a number of others suggested that not enough of interest was happening and it was too ordinary, as in comment 8/3.1.1 from R3LG.

It appeared that these respondents did not perceive the real world 'everyday' sounds differently through the piece, as was the intention. The parts that seemed to capture the majority of listeners' attention were the loud and dramatic sections. It might be that in these sections they were forced to pay more attention due to the increased volume, and in quieter sections were more likely to be distracted.

Q51Q - Overall did the composition make you want to keep listening or was it uninteresting?

12 (52%) of the participants said they wanted to keep listening, 7 were undecided, 4 found it uninteresting, while one clearly misunderstood the question thinking it asked *would you like it to carry on for longer?*

7 listeners were not sure either way, such as R11LG whose answer was self-contradictory (see comment 9/3.1.1). R3LG wanted to keep listening because the unfamiliar sounds were intriguing and they were not sure how the piece would unfold, as shown in comment 10/3.1.1. This was a recurring theme throughout the workshops. R23LG (below) and R12LG (comment 12/3.1.1) were similarly intrigued but their answers were also connected to place:

I wanted to keep listening because it went from one area and then transported you to another. I wanted to know where it would take me next. (R23LG)

These answers imply the ability to create a picture of a place in the mind through listening, which is an important facet of heightened listening that in a practiced listener can be used to map an environment (see section 1.2.2).

Q61Q - Would you like to listen to some sound based music again in the future?

15 (65%) stated they would like to listen to some sound based music in the future. 7 (30%) said they would not like to listen again with 1 undecided. 3 participants commented on the fact that using real world sounds can be interesting in music, as one might not notice them in daily life thereby recognising the lack aural awareness the HL project aims to address, for example comment 13/3.1.1 from R15LG. 3 were interested in the narrative potential such as R8LG (comment 14/3.1.1). 2 listeners were excited by the creative potential, for example comment 15/3.1.1 from R23LG who had mentioned previously about being transported to another place.

2 of the negative responses focused on the lack of conventional musical qualities. This suggests these listeners already possess established views concerning music and so are not as open to the unconventional approach of sound-based music, as shown in comment 14/3.1.1 from R18LG. This is interesting in light of the 'open earedness hypothesis' as described in 1.3.2, which suggests that listeners become less open to unconventional music as they get older. It might be that an even younger age group than 11-13 year olds would be less likely to have entrenched opinions about music. R10LG felt it did not conform to the 'type' music they liked to listen to. The implication in 'my type' is that this might be connected to their identity, something that has been identified as a strong tendency in secondary school pupils (Hargreaves, Marshall, 2003:266).

3.1.2. Responses to second questionnaire (2Q) – testing the influence of listening exercises and dramaturgy on appreciation

By the time the second listening exercise took place some of the pupils were losing concentration. However there was wide agreement that, as a result of the listening exercises, sounds had more clarity and appeared louder. Before the second listening one of the pupils suggested putting their fingers in their ears first (as in the ear cleaning exercise as explained in chapter 2) for a short while and then listening to the piece. The whole group did this but then while the piece was playing some of the class became disruptive (talking, giggling, making noises). This is reflected in some of the answers to Q42Q. As noted in Chapter 2 in relation to Abington High, peer pressure might have influenced results as many of the negative respondents were sat together as were some of the positive ones.

Q12Q - Please describe anything new you noticed by listening a second time.

This question aimed to investigate the impact of the listening exercises and whether as a result their listening had become more attentive. Many of the same sounds such as dogs, ducks, helicopters, planes and birds were listed as in Q11Q. There were indications that 6 of the listeners were listening more closely as they noticed more sounds, such as comment 1/3.1.2 from R9LG.

6 participants suggested the piece was actually different, 4 said this in relation to volume, such as R23LG (comment 2/3.1.2). This could have been as a result of greater clarity from the ear cleaning exercises, as the volume was actually no different.

Q22Q - Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)?

This concerned a sense of place and all participants thought the sounds were outside, 16 (70%) of the answers specified a type of place and 12 (over half) said this was in a natural environment. Table 3.4 shows the most common responses.

The most frequent type of location specified was in a jungle, forest or woods, which was mentioned by 8 (35%). Interestingly, this particular type of environment was not mentioned in the intention information unlike 'a pond', which had 2 mentions. This influenced the reworking of the piece as described in 3.1.3. Some were not very specific and answers from 2 participants were influenced by their interpretation that the sounds were scary, such as R2LG (Comment 3/3.1.2) who had not mentioned this in previous answers. R17LG answered similarly but also demonstrated some recognition of the effect of space on sound (Comment 4/3.1.2).

There were 4 mentions of helicopters in relation to location, two of which were in connection with war or the military. There was evidence of use of the imagination in many of the answers (something that is important in heightened listening as described in 1.3.4), such as R3LG who had demonstrated a similar ability in previous answers:

It was like I was walking through a field it was dark and there were trees to one side of me and a pond to my other side and I could see the moon.

Similarly R4LG felt like it was maybe set 'in a deserted city'.

Q32Q - Did the title and information from the composer help you to understand the composition?

These answers also guided the reworking of the piece in order to communicate the intentions more effectively, for example there were 7 answers that felt the piece did not evoke night or day meaning this aspect of the piece needed to be communicated more effectively (see 3.1.3). 13 (57%) answered affirmatively saying that yes it assisted their understanding of the composition. 5 of these said it helped them to picture the scene more accurately. However 4 more said it helped them in part to understand the piece. Therefore to some extent it aided the understanding of 17 of the participants (74%) in total.

3.1.3. Responses to third questionnaire (3Q) – testing the process of triangulation

This was a shorter session two weeks later and the teacher made sure that the disruptive students were not sat together. Unfortunately 3 of the students (R11LG, R13LG and R14LG) present in the first session could not attend meaning 20 students took part in this session, this was a logistical issue that also arose with the group at Trinity (see 3.2). However all data has been included from each session, as it can still help to indicate the effectiveness of each workshop.

Some participants showed real interest in the session and a majority wanted to listen to more pieces at the end. In discussions about the piece comments were made such as ‘it was definitely more interesting as it felt much more realistic, as if you were there.’ This shows further evidence of the sense of place, which is an important feature of heightened listening and soundscape works. It also demonstrated that, for some of the listeners at least, the process of triangulation had worked effectively. Some of ‘Cricket Voice’ by Hildegard Westerkamp was played at the end of the session; this was received quite positively with a number of questions about how the sounds were created for the piece. Two of the pupils then asked for recommendations of other sound based music and composers to listen to. When discussing the listening exercises the majority of participants said that they helped to notice sounds in the background as well as in the foreground.

During reworking in order to increase interest in the opening section, which had been identified as one of the least interesting parts, some water sounds were added that had been recorded using a hydrophone. This was to evoke a feeling of being in the pond with the wildlife around the listener. The end section, which had been the other most common least interesting part, was shortened and the levels adjusted to try to create a more convincing soundscape. Sounds similar to heartbeats were further developed and used to mark the transition between the sections that represented night and day more clearly (these can be heard on the binaural version on the disc, although they are still included in the final version they are masked slightly by changes made – see 3.4.3).

Q13Q - What differences did you notice from last time you heard the composition?

10 (50%) of students made reference to the water sounds, 6 listeners said there were more sounds, 1 said they did not notice any differences. 8 thought it was louder, even though the volume had not changed. 2 commented that heartbeats marked the changes between sections. Some of the respondents included sounds that had been mentioned in the previous session such as helicopters, planes, frogs, crickets and birds. The only new sounds (other than water) that had not been mentioned before were: a rooster, leaves rustling, footsteps and pebbles. R15LG commented that:

It was more realistic and it felt like you were there.

Q23Q - Did you find it (please circle) -

A (More interesting) -5

B (Slightly more interesting) -8

C (No difference) -3

D (Less interesting) -4

13 (65%) in total answered A or B. R8LG commented on it seeming more realistic (comment 2/3.1.3). For 2 students repeated listening actually made it less interesting, such as R17LG (comment 3/3.1.3). Both of these had given very negative answers in the first session.

R16LG who had been undecided in the first session and said the beginning was boring answered B and made a cinematic reference (comment 4/3.1.3). This suggests that triangulation had helped to improve this listener's appreciation, as the beginning had been altered.

Q33Q - Do you think the listening exercises in each session have helped you to listen more closely to the sounds?

12 answered yes the listening exercises helped (60%), while 8 said no. All but 1 of those who answered D to Q2 answered negatively to this. However, R2LG the other who answered D on Q2 felt the listening exercises helped to notice more sounds (comment 5/3.1.3).

All of those who answered positively described greater aural awareness, for example by being able to hear sounds that are less noticeable, such as R23LG:

Yes, I think it helped me notice the background sounds so I had a better idea of what was going on. I had a better picture in my head.

One of the principal aims of the HL project was to enable the participants to develop a deeper awareness of the sounds around them and form mental pictures through listening. Many of the positive responses to Q3 demonstrate the effectiveness of short simple listening exercises in achieving this, suggesting that given more time to practice the benefits could be quite significant. As R2LG explains, it was commonly noted with each group how closing their eyes helped concentration, demonstrating how something this simple aided their ability to listen by removing the distraction of the visual. R23LG's apparent visualization through listening is a vital component of heightened listening, as it allows a mental picture of an environment to form creating a sense of place.

Q43Q - Now you have completed the workshops and done the listening exercises, would you like to listen to some sound based music again in the future?

12 (60%) answered yes they would like to listen to sound-based music in the future, while 7 answered no and 1 was undecided. 3 listeners commented on how it helped to make one more aurally aware. 6 of the negative answers made reference to sound based music not having elements contained in conventional music similar to those described in 3.1.1 in answer to Q61Q.

The percentage answering positively here is down from the first session but is still in the majority. However, the negative respondents on the whole have not had their opinions changed. The teacher commented that students engage more when active participation is involved and that they will listen far more attentively to their own work or each other's, than the examples she plays to them. Further participation might have been facilitated through a soundwalk where students could make their own recordings, unfortunately this would have required extra time that was not available. Such an approach has been used as part of other research into E/A music education at De Montfort University with encouraging results (Therapontos, 2011).

3.2. Trinity

This is a mixed state school in Leamington Spa. The group consisted of 21 11-12 year olds and were difficult to control. Although they listened fairly attentively to the piece, when it came to completing the questionnaires they lacked focus. As a result the answers are not very detailed, although there did not seem to be a pattern in responses from participants who were sat together. The teacher explained that the group was of mixed ability and a number of the participants had difficulty expressing their thoughts in answer to the questions. However they reacted enthusiastically to the piece itself when it was played and asked many questions.

3.2.1. Responses to first questionnaire – testing the influence of initial listening exercises.

Q11Q

A wide variety of sounds were mentioned again (Table 3.5) with similarities to Leicester Grammar, although water had been added in the reworking stage and was now obviously a pertinent feature. As shown in Figure 3.3 in Appendix 4, 62% mentioned water, birds or crickets and insects while 57% mentioned planes or helicopters (or both). In total 71% mentioned forms of transport within their answers and as with Leicester Grammar these mechanical sounds seemed to make

the most positive impression (see Q3). Also similar to Leicester Grammar were the supernatural interpretations, with 2 mentions of demons. One of the most interesting responses that had not occurred before was of 'swimming pool echoes' from R8T, demonstrating strong associative listening.

Q21Q

13 of the group (62%) did notice sounds from different parts of the room. There were 2 negative answers, 2 did not answer and 2 were undecided while one appeared to misunderstand the question. As can be seen in Figure 3.4 limited explanation was given in these answers, for example only 2 listeners identified sounds in specific speakers.

Q31Q

As shown in Table 3.6 the aircraft sounds were the most popular as had been the case at Leicester Grammar.

Q41Q

Table 3.7 shows that motor vehicle was the most common least interesting factor. Whereas 30% of the Leicester Grammar group felt the beginning was the most uninteresting, this was shared by only 14% of the Trinity group and none of the Leicester High group who heard the same version. This might have been due to reworking this section, but despite this it was still the third most common response at Trinity. It is likely that the perception of motor vehicles came from the same sounds some perceived as aircraft. As these are imaginative interpretations of sounds that have been transformed, it is difficult to know, for certain, which sounds participants are identifying with which sources.

Q51Q

17 (81%) wanted to keep listening while 2 said they found it boring and 2 said it was 'alright'. R15T enjoyed the mix of human and natural sounds (comment 1/

3.2.1). Exploring the contrast between these two elements was one of the composer intentions. R14T however, enjoyed the opportunity to listen closely to different sounds (comment 2/3.2.1)

Q61Q

14 (67%) answered yes they would like to listen to sound-based music again, 4 answered no (2 of these because they found it boring), 1 answered 'dunno', 1 did not answer and R13T who answered negatively to Q5 said:

Yes if it was more interesting.

R5T said:

Yes because it's really heart racing.

Whereas R6T enjoyed it for the opposite reason:

Yes because I enjoy peaceful music.

These answers might reflect the differences between sections of the piece; other participants shared both these views. Many of the other positive respondents just remarked that they found it interesting. However, R15T who had enjoyed the mix of human and natural sounds commented:

No because I do like the sounds but I prefer other music and sounds.

As with a number of participants across all the groups this answer suggests a potential interest in sound-based music. This might have been developed if more time had been available to allow listeners to explore and participate in greater depth.

3.2.2. Responses to second questionnaire – testing the influence of listening exercises and information from the composer on appreciation

When it came to completing this questionnaire many in the group had lost focus, which is reflected in some of the answers.

Q12Q

8 said they noticed nothing by listening again, 2 felt it was clearer, 4 said they noticed more sounds such as bats and sprinklers, while an interesting image was created in the mind of R17T (comment 1/3.2.2).

Q22Q

There was a lack of detail in describing a sense of place. 17 said outside, 7 (33%) specified a type of place all of which were natural environments. 2 mentioned a jungle or forest, 1 a swamp and 4 said it must be outside because of the animal sounds. 2 mentioned nightmares, one of these was R11T who had earlier mentioned demons (which connects to the recurring horror/supernatural theme) but the other was R17T who had not mentioned this theme before:

Outside, then a nightmare cave, then nightmare outside.

R14T also noted a dream quality to the night section, while R16T simply said, 'Lonely place'. R8T said, 'Swimming pool centre', which connects to their answer 'swimming pool echoes' from Q11Q.

Q32Q

17 (81%) said yes the title information helped, 2 were unsure while 2 said no. Again there was not a great deal of explanation, most of the answers said that it helped them understand it, or that it set the scene, for example R20T (comment 3/3.2.2).

Q43Q

A – 10 B – 5 C – 4 D – 2

Three of the positive answers made references to being able to listen more closely or clearly, for example R2T (comment 4/3.2.2). Overall 71% said it was more or slightly more interesting on the second listen. 5 answers explained this was because they now understood it better, although some of these are very similar to

their answers to the previous question. The answers to this questionnaire were clearly rushed as the students had to finish them before they could go for their break. Even so they are in general positive and in line with the previous responses, as well as with those given at Leicester High to Q3 and Q4 (who listened to same iteration - see 3.3.2). However this was clearly an issue with all the workshops and obviously influenced the quality of data given for the second questionnaire.

3.2.3. Responses to third questionnaire – testing the process of triangulation

For this session 5 of the students were not present. However a later workshop was arranged later for 3 of those missing. Therefore in total 19 took part as opposed to 21 in the first session. As before it was very difficult to encourage them to focus for long and stop talking. However, they did listen fairly quietly to the piece and although there is not much detail in the responses the majority appeared to be still interested. The teacher reiterated that some of them find it difficult to express what they think about music in words (which as discussed in 1.3.4 is a problem many people experience). While the piece was playing some of them demonstrated involvement by reacting to it through movements (such as imitating aircraft) and in their expressions. It might be useful for future research to film such sessions. This version was reworked based on the data from the first sessions at Trinity and Leicester High and is included on the disc as the binaural mix.

In order to improve the beginning section, which had been commonly mentioned as least interesting at Trinity, a full underwater section was introduced. The water part in the beginning section was also identified as least interesting by 21% of the Leicester High group in their first workshop. This change was intended to suggest the listener experiencing the scene from the wildlife's perspective and exploring the pond underwater, then later emerging to the sounds transforming into the next section. The frog sounds were amplified and made more prominent as many respondents seemed to be mistaking them for ducks. The mechanical section was further enhanced with subtle changes to levels and EQ. The crescendo was altered near the end so that the pitch shifted on certain tones. This was to

make it more dynamic, signalling the oncoming daybreak, as few listeners seemed to notice this transition at the previous session. Additionally the final section was mixed differently to further enhance the sensation of the birds surrounding the listener, as despite the changes made after the Leicester Grammar workshop 'birds' were still given as a common least interesting factor at Leicester High.

Q13Q

13 (68%) noticed a difference from last time as opposed to 86% at Leicester High (who heard the same iteration - see section 3.3) and 6 (32%) said they did not. 2 mentioned changes to the pitch and crescendo and 2 mentioned the underwater section, for example the answer from R14T (Comment 1/3.2.3).

Many of the answers were not specific, such as R2T (comment 2/3.2.3), while R13T who had found it boring in the first session thought it had improved (comment 3/3.2.3).

Q23Q

A-9 B-4 C-5 D-1

The participant who answered D had answered very negatively in the first session. This mirrored the results from Q1, as out of the six who answered C or D five of them had said they had not noticed any changes in answer to Q1. Overall 68% found it more or slightly more interesting than before as opposed to 93% at Leicester High, who had clearly listened more attentively judging from the responses to Q13Q (see 3.3.3) resulting in a greater increase in appreciation.

Q33Q

13 (68%) answered yes the listening exercises helped (compared to 86% at Leicester High, 60% at Leicester Grammar and 87% at Kingsley), while 5 answered no and 1 answered 'don't know'. Both the Trinity and Leicester Grammar groups suffered from greater loss of concentration as the sessions progressed, which

might explain these differences. 3 of the 6 who answered C or D in Q2 answered negatively and had also said they had not noticed any difference in Q1. R7T who answered negatively seemed uncertain in the explanation (comment 4/3.2.3).

R6T commented:

Yes – It helps me because I can listen to other things out of school.

One of the key aims of the research in line with Action Learning as explained in 1.3 is for the educational aspect of the project to be useful beyond school. R15T also remarked that the exercises helped in noticing sounds (comment 6/3.2.3), while R17T said they helped to notice quiet sounds demonstrating an increased sonic awareness (comment 7/3.2.3).

Q43Q

13 (68%) said yes they would like to listen to sound-based music again, 5 said no and 1 was uncertain. The majority of those who answered yes to Q4 answered positively to Q3. As with Leicester Grammar there had been little change in opinion between the sessions. The answers again lacked detail with many positive responses simply saying it was because they found it interesting. The disruptive behaviour of some of the students made detailed responses unlikely. The behaviour in the extra session with 3 students who had been absent was far more focused with all the questions answered without talking and in more detail, such as comment 1/3.2.3 from R14T. This, as well as the difference in response from the group at Leicester High below (who were far more focussed while listening to the same iterations), demonstrates how group dynamics and peer pressure might influence results.

3.3. Leicester High

This is a private all girls school and the group consisted of 14 Year 7 students (11-12 year olds). The class were engaged throughout the session and gave detailed responses.

3.3.1. Responses to first questionnaire – testing the influence of initial listening exercises.

Q11Q

There were a greater variety of sounds noticed by this group than both Trinity and Leicester Grammar (see Table 3.8). For example more specific images were described such as ‘water being gargled’ by R12LH and ‘something moving in a muddy puddle’ by R6LH. As shown in Figure 3.5 in total 86% mentioned plane, helicopter or both. Many of the same sounds were mentioned as at Trinity and the five most common responses are the same, although insects were mentioned more at Trinity. Unlike Trinity there were no horror references but there was one mention of ‘something sounded a bit alien like’ from R5LH. There were two mentions of underwater such as ‘underwater atmosphere, fish squeaks’ from R14LH. There were 2 mentions of screams, whereas screams/voices/singing were mentioned by 7 of the Trinity group.

Q21Q

As previously it is likely the responses were influenced by where the participant was sat in the room. All (100%) answered positively saying they noticed sound from different parts of the room. In general these answers were more spatially aware and descriptive than Trinity (where 62% noticed sounds from different parts of the room), but as with Trinity the movement of sounds was the most commonly identified aspect as is shown in Figure 3.6.

6 (43%) mentioned movement, 4 of these were specifically in relation to planes or helicopters. Some descriptions were rather vague such as R1LH (comment1/3.3.1), while others were more precise, such as R10LH (comment2/3.3.1). This answer is accurate in part but the birds and water actually came from all round the room. Mechanical sounds did come from the left rear speaker at times, but it depends on which sound this participant perceives as the plane and again will be influenced by where they were sitting. 3 mentioned a perception of the planes or helicopter being above them, such as R8LH (comment3/3.3.1).

Q31Q

As shown in Table 3.9, 50% mentioned planes or helicopters as the most interesting part. This was also given as the most interesting at Leicester Grammar and Trinity. It is not completely clear which part those listeners who said the middle section (mentioned by 2 listeners) are referring to, for example see comment 4/3.3.1 from R9LH .

Q41Q

As can be seen in Table 3.10, 43% mentioned the birds or end section as the least interesting part and this was altered before the second session as was the water sound (see 3.2.3), it is likely that drilling (third least interesting) refers to the mechanical section that others interpreted as planes or helicopters.

Q51Q

10 (71%) said they wanted to keep listening. 3 of these mentioned a narrative aspect as being interesting such as R5LH (comment 5/3.3.1). The remaining 4 participants were unsure, such as R9LH (comment 6/3.3.1). This listener showed signs of increased appreciation over the two workshops, finding the piece more interesting with each listen and saying the listening exercises helped to listen more closely. As noted with R15T at Trinity, this suggests a potential for greater interest to develop (given more involvement and time) and was evident in answers from a number of students at Leicester High.

Q61Q

6 (43%) said they would like to listen to sound-based music again. This was surprising given the answers to Q5. However, out of the remaining answers 6 said they would not and 2 were unsure, for example R12LH (comment 7/3.3.1). This answer showed confusion about E/A music being only for the blind and was

shared by one other listener. This view might have arisen from the section of the workshop that described the listening of the blind.

4 answered negatively as it was not their type of music (2 of these mentioned the lack of a beat). As noted with Trinity and Leicester Grammar this was a recurring theme in the negative responses, although R11LH suggested part of the issue was that it was unfamiliar (comment 8/3.3.1). If this was the case then again more exposure to E/A music and participation might have altered this view. R11LH found the piece slightly more interesting with each listen and responded positively to the listening exercises, suggesting that raised aural awareness was having some influence on appreciation. R13LH implied that although she did not want to listen to this kind of music she might like to listen to sounds, which indicates that some less processed soundscape works might appeal to her (comment 9/3.3.1).

R6LH understood the value of listening rather than relying on sight (comment 10/3.3.1), whereas R4LH enjoyed the sense of going to another place through listening (comment 11/3.3.1), which is similar to those who said the same at Leicester Grammar. It is interesting that this sense of place was not so evident in the answers at Trinity where in general the listeners were not as concentrated.

3.3.2. Responses to second questionnaire – testing the influence of listening exercises and information from the composer on appreciation

Q12Q

2 did not notice anything new while the remaining 86% all noticed new sounds or differences. However, a number of these replies mentioned sounds or aspects that were included in the composer information read out before this listening, such as frogs, crickets and a pond. 2 felt it was generally louder and 2 that they could hear it more clearly, which might have been as a result of the listening exercises, such as R8LH (comment 1/3.3.2)

Q22Q

All said outside, 12 (86%) of which suggested a natural environment of some sort although 2 of these answers were vague, while 10 (64%) specified a particular type of place.

Table 3.11 shows a breakdown of the type of places that were specified (some of the participants mentioned 2 of these within their answer). 43% of the whole group mentioned forest or woodland while only 23% mentioned a pond as described in the composer information. R5LH had a clear picture of woodlands (comment 2/3.3.2), while in the imaginative answer given by R1LH 4 different environments are mentioned (comment 3/3.3.2).

R1LH answered positively throughout the workshop apart from the final question on listening to sound-based music in the future, where she answered that she would rather go and find her own environmental sounds to listen to. As with the answer from R9LH to Q51Q, this suggests that with more participation, such as taking part in a soundwalk and choosing sounds to record, this listener's views on future access might have been different.

Q32Q

11 (79%) said the composer information helped, 5 of those said it helped them to picture the scene or created an image in their mind, meaning it aided heightened listening, such as R10LH (comment 4/3.3.2). R1LH felt it did not help because it did not fit with her interpretation, which also had a science fiction influence (comment 5/3.3.2).

Q42Q

A-3 B-8 C-3 D-0

The majority (8) said B with 11 (79%) in total saying more or slightly more interesting. 4 said closing their eyes improved the experience such as R1LH (comment 6/3.3.2). R9LH said closing her eyes stimulated her visual imagination

(comment 7/3.3.2). R14LH thought the information had helped her to understand it but still felt it sounded the same, almost implying that she thought the question was whether the piece sounded different rather than whether she found it more interesting (comment 8/3.3.2).

In discussion at the end the general opinion was that they found the piece interesting, but when asked if they would like to listen to sound based music in the future, there was more uncertainty and a majority answered 'maybe'. They demonstrated a higher level of aural awareness in their answers, which appeared to positively influence their responses to Q42Q. This, despite their uncertainty on future access, shows potential for developing greater interest.

3.3.3. Responses to third questionnaire – testing the process of triangulation

Alterations were made to the piece before this session as described in 3.2.3.

Q13Q

All respondents noticed differences to the piece. Half the group mentioned the frogs, which were now more prominent in the opening section, while half mentioned the underwater/ water parts and 3 the planes or helicopter. R11LH explained:

The frogs sound more of a frog. The frog falls into water. Bubble sounds appear.

This was a feature that had not been clearly received in the earlier iteration as many answers confused the frogs for ducks. R12LH noticed the spatial aspects more and narrative (comment 2/3.3.3). 2 said it was quieter and more surreal while two thought it was louder, differences that again might be explained by separate seating positions.

Q23Q

A-6 B-7 B/C-1

Virtually the whole group found it more or slightly more interesting, with one who was unsure giving a B/C answer. 5 (36%) said it was the new water sounds and underwater section that made it more interesting. R3LH showed appreciation through an understanding of how sound is influenced by being placed within different environments (comment 3/3.3.3). R10LH felt it was more realistic (comment 4/3.3.3). As described earlier the forming of scenes in the mind through sound that R10LH describes, is an ability related to heightened listening.

Q3Q

12 (86%) felt the listening exercises helped them to listen more closely. R1LH explained how hearing background sounds increased her appreciation (comment 5/3.3.3). Additionally, R12LH described how it raised her awareness of the quietest sounds (comment 6/3.3.3). R7LH answered negatively, although did not seem sure if the exercises might have helped her listening outside school (comment 7/3.3.3). The answers suggest that the majority of the group had raised aural awareness as a result of the listening exercises.

Q43Q

Despite the positive answers to other questions only 6 (43%) answered yes to this question. R1LH did not like the fact the sounds had been altered (comment 8/3.3.3), which was also reflected in an earlier answer to Q61Q. This suggests an interest in sounds and listening, supported by her answer to Q3. Many of the negative responses explain they prefer different music, but there was again a suggestion that an interest in sound-based music might be developed in some participants, given more time and exposure. As R9LH explains, it was still in some ways engaging (comment 9/3.3.3)

R6LH states:

Yes, as it would help me in future and sound based music paints pictures in my head which I think is quite good.

Again this shows evidence of the use of imagination, as characterized in aspects of heightened listening defined in 1.3.4, thereby aiding appreciation. Additionally it suggests that these learnt skills might be used in the future (one of the hopes of the HL project), as also evidenced in R2LH's response (comment 12/3.3.3).

After the workshop the teacher said she was thinking asking the students to record their own sound pieces; the teacher at Leicester grammar proposed similar plans. The data suggests that this kind of participation might make a difference in turning the uncertainty of some of the responses into future engagement with sound-based music.

3.4. Kingsley

This is also a private girls school but in Leamington Spa. The group consisted of 23 11/12 year olds. The group were the most enthusiastic and provided very detailed responses to the soundwalk and ear cleaning exercises.

3.4.1. Responses to first questionnaire – testing the influence of initial listening exercises.

Q11Q

As shown in Figure 3.7, helicopters, planes, water, birds and insects were the most recognised (the same as with the other groups except water was not recognised at Leicester Grammar as it had not been added to the piece at that point), although the less specific 'animals' was mentioned by 43%, which was the same number as for insects. The variety of answers is shown in Table 3.12. 11 (48%) recognised underwater sounds while in total 83% mentioned water or underwater sounds. Some of these were quite descriptive for example 2 mentioned underwater 'creatures' while R8K heard '*something emerging from water*'. 2 heard a stone or rock dropping in the water, for example R19K:

a stone been dropped in the water and it took you with it

In many of these answers there was clear use of the imagination and again a few associations with horror, for example R13K described 'mermaids screaming'. Within these there was only one science fiction reference from R3K who said:

'everything sounded kind of supernatural and alien'.

Q21Q

20 (87%) noticed sounds coming from different parts of the room. R22K answered '*Nothing*' while R12K misunderstood the question as meaning the type of place the sounds might be recorded in. Figure 3.8 shows a break down of responses, the remaining answers were more general or vague and not quite as specific as at Leicester High, but show a greater awareness than Trinity. In total 26% identified movement as opposed to 43% at Leicester High, 14% at Trinity and 17% at Leicester Grammar.

Q31Q

Table 3.13 shows that the underwater and water parts were the most commonly mentioned interesting factors (14 listeners in total 61%), with 10 listeners highlighting the underwater section in particular (a number of these also mentioned water in general). Unlike the other groups planes and helicopters were only the second most popular with 8 listeners (35%) mentioning them. However, this was the only group to have the underwater section in their first listening.

Q41Q

As Table 3.14 shows, despite the changes made to the piece, as with Leicester high and Leicester Grammar, birds was the most common response with 6 listeners (26%) mentioning it. The same number however said they did not find any part uninteresting. Interestingly, 4 mentioned helicopters or planes as opposed to the 8 who had found these the most interesting parts.

Q51Q

22 (96%) wanted to keep listening, while 1 (R14K) felt it was repetitive (comment 3/3.4.1). This was highest percentage of positive responses to this question and most of the responses were enthusiastic, such as R13K (comment 4/3.4.1). Many of the answers concerned the variety of sounds and unpredictable nature of the piece, a theme that was present in all the groups.

Q61Q

20 (87%) answered yes they would like to listen to sound-based music again, which was also the highest positive response to this question. As with some of the negative responses in the other groups 1 of the 3 other answers mentioned the lack of a beat or tune, while 1 (R23K) was undecided (comment 5/3.4.1).

However, R13K expressed a desire to compose some sound-based music (comment 6/3.4.1). An interest in identifying the various sounds was noted by a number of listeners from this group over the 2 workshops. 2 mentioned the narrative element as being interesting, a theme that also emerged in the other groups, such as R2K (comment 7/3.4.1). 6 mentioned it was because it was different to other music they had heard, such as R12K (comment 8/3.4.1).

This was the last group to be tested so they heard the last two iterations (the binaural version and final version on the disc). Their enthusiasm might suggest that the triangulation process resulted in a work that was more accessible to new listeners from the beginning of the project. However, other factors such as the listening conditions clearly influenced their appreciation, as the group were all very focussed and there were no problems with disruption or loss of concentration.

3.4.2. Responses to second questionnaire – testing the influence of listening exercises and information from the composer on appreciation

Q12Q

21 (91%) noticed something new on the second listening. 5 said it seemed clearer or louder in parts than last time, such as R9K (comment 1/3.4.2). 3 noticed a heightened spatial awareness, for example R18K, which resulted in an imaginative horror interpretation (comment 2/3.4.2), while R19K was just listening more attentively (comment 3/3.4.2). These answers suggest improved awareness that might be the result of the listening exercises.

Q22Q

All said the sounds were outside apart from one listener R18K who only said: *'Some were under water'*. In total 15 (65%) gave answers that suggested a natural environment of some kind, compared with 86% at Leicester High.

As shown in Table 3.15 in total 13 (57%) listeners specified a particular type of place compared with 64% at Leicester High, 33% at trinity and 70% at Leicester Grammar. As at Leicester High a forest or water environments were the most common. As with the other groups some were more descriptive and seemed to have clear images in their heads, for example R9K (comment 4/3.4.2) and R1K (comment 5/3.4.2).

Q32Q

19 (83%) answered positively concerning the composer information, while 2 said no and 1 answered 'sort of' and 1 (R19K) was undecided, as it did not explain all the sounds (comment 6/3.4.2). R7K felt it made the piece clearer (comment 7/3.4.2), while R22K did not think it helped:

No because I couldn't work out when it was night or day.

This response was most common with the Leicester Grammar group where nearly a third had mentioned this as a problem, but this had been addressed in the

subsequent iterations (by marking the sections with heartbeats) and was remarked on far less as a result.

Q42Q

A-12 B-10 C-0 D-1

In total 97% said it was more or slightly more interesting listening a second time. 13 (57%) suggested it was because they were listening more clearly or concentrating harder. For example R20K commented on the benefits of closing their eyes to listen (comment 9/3.4.2). 4 said it was due to having a greater understanding of the piece, as explained in the example from R7K (comment 10/3.4.2).

There were many questions from this group, some of which concerned how they could go about making their own compositions. The teacher planned to set them a project to follow on from the workshops where they would record their own sounds and then use them to create their own sound pieces in Cubase. He also intends to incorporate the 'ear cleaning' exercises in his teaching with other groups.

3.4.3. Responses to third questionnaire – testing the process of triangulation

As the reaction in the first session had been so enthusiastic it was difficult to know where to make changes. As the most common least interesting part, alterations were made to the end section with light digital delay added to some of the bird sounds. The intention was to try to enhance the sounds and encourage the listeners to hear them differently. Additionally some pitched tones were introduced using filters in the mechanical section and the tone of the rhythmic mechanised sounds was altered to sound deeper. In the previous session the loudness of this section had been mentioned as a least interesting part and although the volume was not reduced (as planes/helicopters were also a common most interesting factor), the changes attempted to accentuate the musicality of the engine sounds and soften them slightly. Therefore, even though this partially

masked some other sounds, it was felt it might improve the experience for some listeners. This iteration is included on the disc as the final version.

Q13Q

Only 1 listener did not notice any differences. The most common noticed differences are shown in Table 3.16. While those who mentioned helicopters and planes did not do so in terms of pitch or tone, some of the 6 who did mention pitch did so in relation to helicopters and planes. Therefore it is likely that they are referring to the same changes but expressing them differently. This would mean that the changes made to that section were the most recognised, while 6 (26%) of the group mentioned changes to the birds. Interestingly, 3 thought it was longer even though the length had not been altered.

Q21Q

A-9 B-7 C-6 D-1

In total 16 (70%) thought it was more or slightly more interesting than previously. R5K thought it was more interesting:

I preferred because especially on the engine bit it is more drumlike.

Whereas R13K thought the bird sounds were improved (comment 2/3.4.3). R19K appreciated that their views had been noted and were able to influence the piece (comment 3/3.4.3).

As with the other groups altering the piece based on the responses resulted in increased appreciation in the majority of participants. A number of respondents who answered C said it was because they noticed little difference to the piece. However, R23K (comment 4/3.4.3) thought it was less interesting and that more mechanised sounds had been introduced, even though the section with those sounds was actually no longer. This demonstrates how a listener's perception and memory of a piece can be different to the work itself, in reality it might just have

been that they were more focused on that particular section, thereby distorting the accuracy of their recollection.

Q33Q

20 (87%) felt the listening exercises had helped them to listen more closely.

R21K said no as:

I am so use to using my eyes as my main sense.

This comment supports the argument of acoustic ecologists (as described in 1.3) who blame the deterioration of listening skills on the dominance of the visual. 14 (61%) said yes because the exercises helped them to listen to details or notice aspects they would usually ignore, as explained by R13K (comment 6/3.4.3). R15K notes how this aids the imagination, which is central to heightened listening as defined in the HL project and the use of which has been evident in answers from all groups (comment 7/3.4.3). R4K explains that:

*The listening exercises helped me listen to the sounds more clearly,
they became more clear and louder.*

This is supported by reactions after the second listening (following the ear cleaning exercises) in all the sessions that the piece was louder and clearer.

Q43Q

18 (78%) answered yes they would like to listen to sound-based music again, while 5 said no. Although the number of positive responses is slightly reduced from the first workshop (down by 2) most of the answers were still as enthusiastic. It is also the highest number of positive responses to this question across all the groups. R3K liked the fact it was new to her and looked forward to the project planned by the teacher in connection with the workshop (comment 9/3.4.3).

R14K who answered positively to this question in the first session answered no, appearing to not like how the sounds had been altered (comment 10/3.4.3). This suggests that the listener could respond differently, as with some

participants at Leicester High, to a less processed soundscape work. R17K the other listener who answered differently from the first questionnaire said:

No because I like different types of music but I did enjoy it.

The enthusiasm of this group was probably due to a combination of factors such as the school itself (it puts an emphasis on the arts and creativity), the teacher's interest in experimental music, the group dynamics (the enthusiasm of some rubbed off on the others), the piece being its most 'accessible' and because everything was probably explained in greater depth as the participants asked so many questions.

3.5. Tests with the visually impaired

The blind participants were unable to make notes while listening so unlike the school groups had to remember what they heard afterwards and also rely on scribes to accurately record their answers. The participants came from a range of age groups, had different levels of visual impairments and a range of abilities. As a result the results are not directly comparable with the school groups and the most interesting data is anecdotal arising from discussion or conversation. Below is an outline of the most useful data from the sessions that were run.

3.5.1. RNIB College Loughborough

Two sessions were organised at Loughborough RNIB College. In both, due to the limited number of learning assistants, the sessions overrun and the participants were tired by the second listening. Below is a summary of general points that arose from answers given and discussions within the workshops:

- The reaction to the first playback was positive.
- The participants were interested in the way the sounds surrounded them. They were very curious as to how this had been achieved and how the sounds were created.

- The majority said they found the experience interesting and particularly enjoyed the natural sounds, such as the birdsong and the running water, which featured in the soundwalk recording.
- When discussing John Hull's comment that 'sound is the blind person's equivalent to light' there was strong agreement that, from their own experience, this was true.
- They agreed that listening was the most important sense to them, with smell being the next important.

3.5.2. Blind musician (VI1)

This session was with a completely blind male musician who is 43 years old and has been blind for many years, but not since birth. Many of his responses are valuable in light of the HL project's hypothesis, as they demonstrate heightened listening skills and an appreciation of sound. VI1 is an example of how heightened listening can develop in someone who, through necessity, has become such a practiced listener, and furthermore how this aural awareness can lead to a greater interest in the sonic world. For these reasons it is useful to present his responses in detail and they can be seen in Appendix 5. Additionally, some of his comments are supported in the descriptions given by blind writers such as John Hull and Jacques Lusseyran (see Chapter 1).

At the start of the session an excerpt from 'Kits Beach Soundwalk' was played as an example of soundscape composition. VI1's response illustrated how advanced listening skills can enhance the experience of listening to a soundscape piece (VI1comment1). Showing a high level of spatial awareness he described in detail how far away he felt the city was, the direction it came from and how he thought it might be an estuary, as explained in VI1 comment2. He also commented that a blind person has to filter out the background noise of the city/town, as Westerkamp does in the piece, in order to focus on sounds.

In response to the listening exercise using sea sounds where participants were asked to describe the type of location he remarked that this was what the

blind are required to do much of the time (VI1comment3). He correctly identified that the first sample sounded different because there were smaller stones on that beach, which the sighted groups had found difficult when doing this exercise. Although he did not identify a sea cave, his response to the third sample similarly showed a high level of aural awareness (VI1comment4).

When it was explained that this third recording was made in Fingal's cave on the Island of Staffa, it emerged that he knew of it and the Mendelssohn piece inspired by it. The idea of it has always terrified him as when he was a young boy and still sighted he fell over in a cave and remembers how dark it was, as a result the idea of being washed into a sea cave has always scared him. When the sample was played again it evoked some uncomfortable associations (VI1comment5). This demonstrates how powerful associations and memories can be for a practiced listener, especially with the aid of some contextual information.

After listening to the soundwalk he gave a detailed accurate description, demonstrating how heightened listening skills enable mental maps to form (VI1comment6). Additionally, in response to the John Hull quotes ('Sound is the blind persons equivalent to light' / 'Blind people live in a world of sound') he gave an interesting explanation demonstrating high spatial awareness (VI1comment7). This response relates to the descriptions of echolocation given in chapter 1 and such skills can enhance the sense of place that many soundscape composers try to evoke.

After the first listening of 'Night and Day' in answer to what was Q21Q for the school groups he accurately specified sounds coming from different speakers and identified movement of 'drilling' sounds, which was also the part he found the most interesting. It is likely these were the sounds that many in the other groups interpreted as helicopter and plane sounds and overall were the commonest most interesting part. However, it was specifically the movement of these sounds that he found most interesting.

In discussion about the piece after the first listening he remarked that the section after the mechanical sounds was 'quite dark' and painted a vivid image through a cinematic reference (VI1comment8). As with some of the sighted group

he went onto describe feelings of fear evoked by the piece and made cinematic references to Alfred Hitchcock's 'The Birds'.

He gave an interesting response to the differences between listening to the piece with and without the composer information especially in view of postmodern theories concerning the interpretation of the reader or listener as described in 1.1, explaining how each experience was different (VI1comment9). He commented that if he listened to soundscape music in the future he would want to listen twice, once for his own personal interpretation and once having read the composers intentions. He also remarked how interpretations can be influenced by other people's perceptions (VI1comment10).

This participant is obviously fascinated by sound and uses it to help form a map of his surroundings. He clearly enjoyed the sense of place evoked by soundscape recordings, as evidenced in VI1comment11. The detail and accuracy of his answers, his strong uses of imagination and associative listening as well as his spatial awareness demonstrate his heightened listening skills. He is a musician so has a keen appreciation of conventional musical sounds but appreciated the experience of listening to sound-based music. He engaged with all the pieces that were played (the only dislike he expressed was for a harsh sound used in 'Chambre d'enfants' by Francis Dhomont) and appeared very interested in the associations evoked by the sounds. His answers also reveal how information from a composer can aid and influence the listener's interpretation. His final comment was very interesting in terms of the aims of the HL project and using listening strategies for sound-based music:

I think it's important to learn to listen to it not as normal music.

3.5.3. Warwickshire association for the blind

Many of the participants were quite elderly or had other disabilities, which meant much of the data was not suitable as a reference for the HL project. However, a 54-year old man (VI2) who has been partially sighted since birth gave some valuable feedback in discussion during and after the session. These add to

and reinforce some of the comments made by VI1 and are also detailed in Appendix 5.

VI2 raised the point that there is a lot of diversity and differences between visually impaired people depending on the level of their impairment and when in life their sight has become affected. Those who have not been blind for long will struggle with sound and might interpret sound differently to those who have been so since birth. For example, there can be a mixture of a visual picture in the persons mind as well as a sound image if the person could once see (VI2comment1). It might be that listening skills are more advanced in someone who has been blind from childhood and therefore an interest in sounds might also be greater. Additionally, there is some neuroscientific research to support this as discussed in 2.1.1 (Gougoux et al, 2004).

After listening to the piece he said some of the sounds reminded him of trains and gave a description of a scene, showing a greater sense of place and aural awareness than many of the sighted listeners (VI2comment2). In discussion about John Hull quote 'Sound is blind persons equivalent to light' he explained how blindness can influence the way objects are perceived, instead of having a colour for example they have a sound (VI2comment3).

Similarly, in his book 'Touching the Rock' John Hull describes how sound can help create a whole scene in the mind of a blind person through the revealing acoustic effect of rain:

*If only rain could fall inside a room, it would help me understand
where things are in that room, to give a sense of being in the room...*
(Hull, 1990:22-23).

These examples describe how the sense of physical objects and their space is aurally created in the mind of a heightened listener, a skill that is important in appreciating works where place is central such as in many soundscape pieces.

In response to the statement that the blind live in a world of sound whereas sighted people live in a world of sight he made a comment (VI2comment4), which relates closely to the acoustic ecologists view of the dominance of the visual in

modern culture. He also explained about noticing objects by how they affect sound (VI2comment5), which support the comments made by VI1. It was also agreed that common sounds for particular locations are widely used by the visually impaired as clues to where they are, which relates to the idea of 'soundmarks' as described in soundscape theory by Murray Schafer (Schafer, 1977:274).

At the end of the session VI2 asked for recommendations of E/A composers and where he might be able to hear some more sound-based music in the future. As with VI1, VI2's comments show a fascination and awareness of sound greater than the sighted groups and that enhanced his appreciation of the piece.

4. Overall evaluation and conclusions

While there was a comprehensive review in Chapter 3 of the results from each school, this final chapter will evaluate the data overall and draw conclusions in relation to the aims of the HL project. These aims were primarily concerned with investigating the effect of learning heightened listening skills on the appreciation of E/A music. The analyses in Chapter 3 largely concerned what Rob Weale has termed ‘micro-level interpretations’, where the listener focuses on particular sounds or parts of the piece rather than an interpretation of the overall work or a ‘macro-level interpretation’ (Weale, 2005:217). The focus of the HL project has been on the participants’ micro-level interpretations as a method of investigating their aural awareness and how this relates to their overall ‘macro-level’ appreciation of the piece. These micro level responses will be grouped together to examine what this indicates overall concerning the relationship between heightened listening and appreciation.

4.1. Overall evaluation of results from the main tests

4.1.1. The role of source recognition in appreciation

Source recognition was identified as a common SHF (see Chapter 1) in the I/R project (Weale, 2005:225). It also plays an important role in the referential aspects of heightened listening, as discussed in 1.2.1 and 1.3.4. Tables 4.1 to 4.3 below show the four most commonly recognised, most interesting and least interesting sounds or aspects overall.

Most Recognised	LG	Trinity	LH	Kingsley	Overall
Helicopter/Plane	96%	57%	86%	91%	83%
Birds	70%	62%	79%	65%	68%
Insects	65%	62%	36%	43%	53%
Water	0%	62%	79%	83%	53%

Table 4.1 – 4 most common responses to Q11Q

Most Interesting	LG	Trinity	LH	Kingsley	Overall
Helicopter/Plane	48%	38%	50%	35%	42%
Water	0	10%	0	61%	20%
Animals/Wildlife	13%	10%	14%	26%	16%
Middle	30%	14%	14%	0	15%

Table 4.2 – 4 most common responses to Q31Q

Least Interesting	LG	Trinity	LH	Kingsley	Overall
Birds	30%	5%	43%	35%	25%
Beginning	30%	14%	0%	4%	14%
Helicopter/Plane	9%	0%	0%	17%	7%
Water	0%	5%	21%	4%	6%

Table 4.3 – 4 most common responses to Q41Q

While three of the four most commonly recognised sounds were recordings of actual sound sources, the most commonly recognised (helicopter/plane) was actually created by processing and transforming material used in the piece. These sounds were introduced into the work as a representation of a group of mechanical sounds. Many listeners mentioned a number of mechanical sounds such as trains or motor vehicles or even referred just to the ‘middle part’, with some answers suggesting awareness that the sounds were representations, such as R3LG:

I found the middle part of the piece most interesting because I couldn't tell what it was. It was like a plane was landing but then it sounded like a train and there was lots of hissing.

Even if the sounds were not completely accurate representations they conformed to how the listeners imagined they should sound and each group asked where they were recorded. It is unlikely that the majority of participants would have often been close to such sounds as helicopters and many of their perceptions might originate from cinema or computer games (some references to computer games were made in relation to these). As Truax comments, sounds are often ‘idealized’ in listener’s memories:

Generally, a tape recording of an actual sound is less effective than a skillful simulation that simplifies and idealizes it... commercials, film soundtracks, and radio plays exploit the listener's ability to generate an "ideal" memory image based on many actual experiences (Truax, 2001:30).

Due to the different iterations of the piece there were variations in answers between the groups. For example water was the most interesting sound for the Kingsley group (mentioned by 61%), but they were the only group to hear the underwater section in the first listening and 71% of these answers mentioned that section. That such a high proportion from this group chose water as the most interesting part has distorted the overall results (20% overall), as only 2 listeners from the other groups chose this. The reason why none of the listeners at Leicester Grammar mentioned water was because it had not been included in the piece at that stage. The results in Table 4.3 show there was less overall unanimity in what listeners found least interesting compared to what they found most interesting.

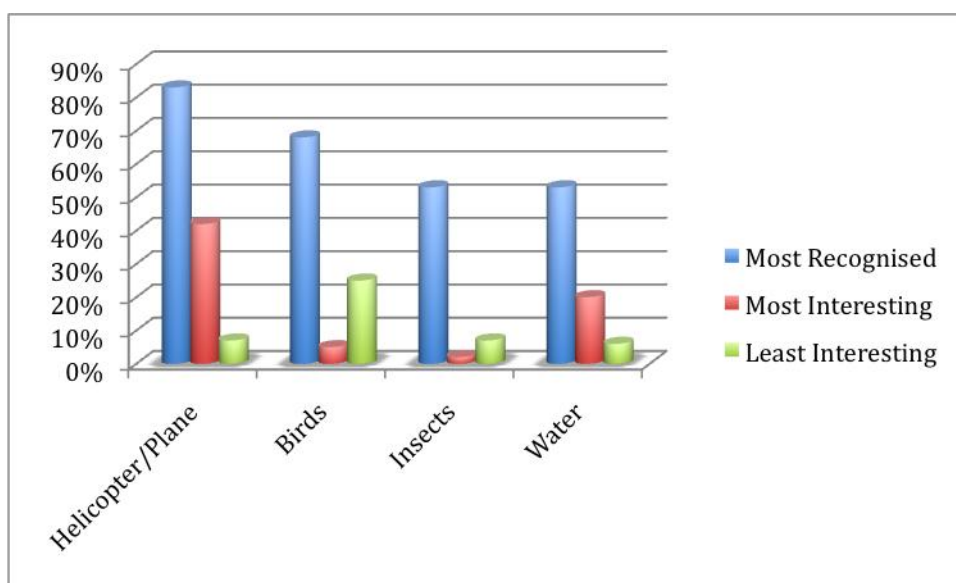


Figure 4.1 – Relation between responses to Q1, Q3 and Q4 in 1Q.

As can be seen in Figure 4.1 there is a clear relation between the most commonly recognised sound (helicopter/plane mentioned by 83%) and the most common interesting part (42%). However, birds were the second most recognised sound (by 68%) and also the most common least interesting factor (mentioned by

25%), while insects, which were the third most recognised, did not feature significantly in either the most or least interesting factors. This suggests that the most common SHF through which listeners accessed and appreciated the piece was by imaginative source recognition of a mimetic sound. However, the aspects that were least engaging also arose from source recognition, but of real sound sources. Imagination and memory might be affecting their perception in these instances. If the listener perceives that the sounds do not conform to their ideal for a particular source, their appreciation might be influenced. It would be interesting to compare their reactions to real engine sounds as opposed to processed artificial ones.

This would suggest that part of what was interesting or uninteresting was connected to the sounds having the timbral character they expect from these types of sounds rather than just their referential aspects. The dynamics of the mechanical sounds, which could be referred to as one of the parameters of the sound (this was one of the SHFs identified by Landy (Landy, 1994:52)), were frequently referred to as well as external associations with engines or aircraft. As discussed in 1.2.1, these two aspects of listening (focusing on external and internal properties) can coexist within a heightened listening strategy with the focus shifting depending on the piece. However, some of the participants who mentioned the bird sounds as the least interesting explained it was because of their over familiarity with these sounds, which suggests that this was due to them being 'everyday' sounds rather than a dislike of their actual timbral qualities. It seems likely then that both external associations and the sounds internal characteristics played a role in deciding responses to these questions.

4.1.2. Awareness of space and place and their influence of appreciation

Q21Q asked whether listeners noticed sounds coming from around the room. There is evidence of spatial awareness in the responses, but they were often not very developed and lacked precision. As is shown in Table 4.4 below Trinity, the least focused group, had the lowest number (62%) who noticed sounds coming

from around the room, while the other groups had strong majorities answering positively.

Percentage of positive responses at each school			
Leicester Grammar	Trinity	Leicester High	Kingsley
96%	62%	100%	87%
Overall			
Yes	No	Undecided/No answer	
85%	5%	10%	

Table 4.4 – Overall responses to Q21Q

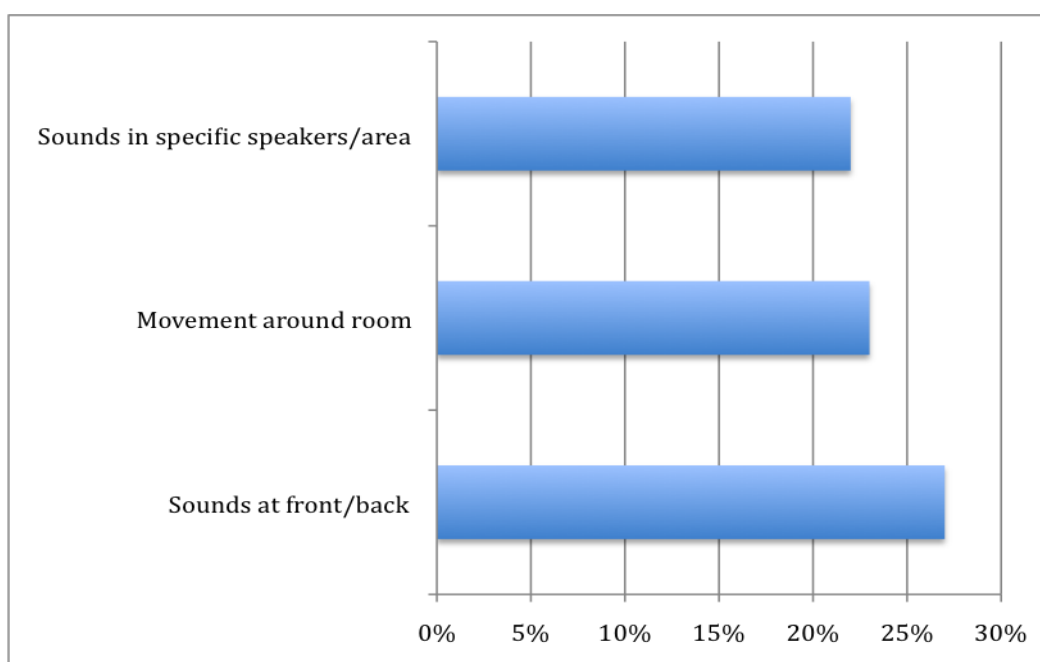


Figure 4.2 – Categories for overall responses to Q21Q

Figure 4.2 shows the percentages for the three most common categories of answers to Q21Q. 22% of all participants identified sounds in specific parts of the room. Movement was identified by 23% overall but was actually the most commonly identified aspect by Trinity, Leicester High and Kingsley. It was still mentioned by 17% at Leicester Grammar, which is more than at Trinity, but as such a high proportion mentioned sounds at the front and back at Leicester Grammar this is the most common overall with 27%. It could be that movement was more obviously perceptible in the later iterations, which would explain this

difference as slight changes were made to the movement of the mechanised sounds each time.

As discussed in Chapter 3 it was difficult to judge the accuracy of these answers, as responses would have depended on where the listener was sitting. Additionally they are difficult to assess, as a number of answers were vague. For example some answers said ‘the helicopter was everywhere’, this does not specify movement but it could mean that the listener noticed the movement of the helicopter sound around the room (as a result being ‘everywhere’) but has just not articulated it clearly. Accurate answers would also require a precise aural memory; it is likely that sighted inexperienced listeners would not have had much practice in trying to remember the spatial characteristics of sounds in this way. As a result a number of participants seemed to find this question difficult.

Q22Q explored listeners’ sense of place. 94% said the sounds were outside. While some suggested a natural environment in relation to animals for example, 56% specified particular types of location and as shown in Figure 4.3, 52% of those said woodland/forest/jungle. However this number was affected by the Trinity results as only 24% there specified a type of place as opposed to 68% of the other 3 groups.

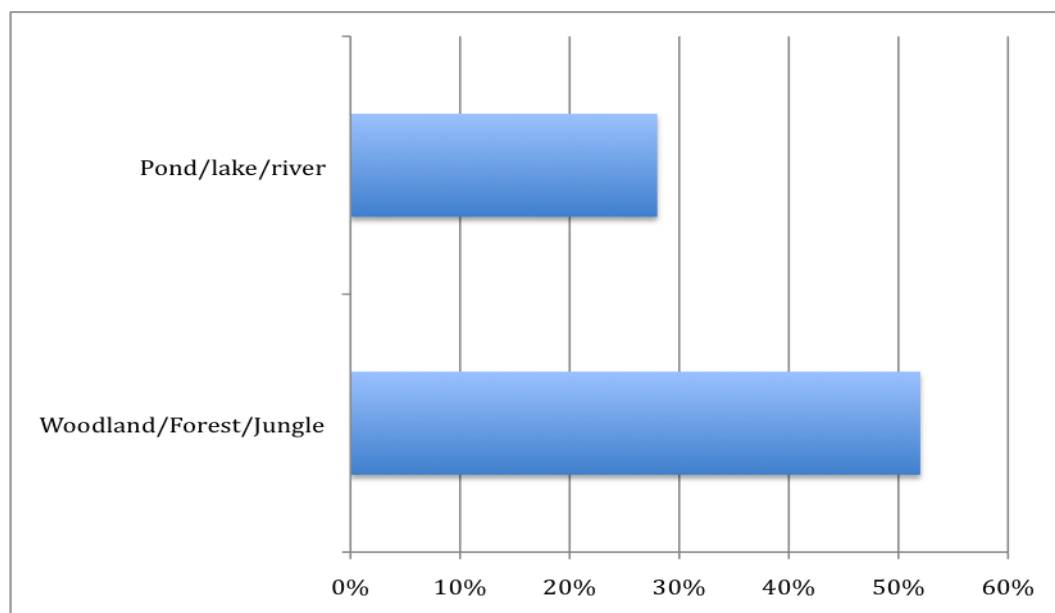


Figure 4.3 – Common categories for types of place given in Q22Q

As outlined in Chapter 3, some participants gave clear and imaginative descriptions. However, even the most advanced responses show that more practice would be required to develop this skill to a level closer to that demonstrated by experienced listeners such as VI1 and VI2 (detailed in 3.5). 64% of those who specified a particular location also answered positively to both questions on appreciation of the piece (Q51Q and Q42Q) for the first two listenings. This correlation was stronger at Leicester High and Kingsley where 80% of those who had a clear sense of place also answered positively to those questions. In general participants were more comfortable in using their imagination to sense a place from the sounds than in trying to remember the precise details of the sounds behaviour within the listening space (as required in Q21Q).

4.1.3. The influence of aural awareness and dramaturgy on appreciation

Q51Q aimed to investigate listeners' engagement with the piece during their first listening after taking part in the initial listening exercises. As is shown in Table 4.5 below a clear majority (75%) across all the groups wanted to keep listening.

KEEP LISTENING	UNINTERESTING	UNDECIDED
75%	9%	16%

Table 4.5 - Overall responses to Q51Q

Q42Q then aimed to examine the influence of further exercises and the introduction of the composer information on appreciation. As is shown in Table 4.6, 72% overall answered more or slightly more interesting to this question.

A – More interesting B – Slightly more interesting C – No difference D – Less interesting			
A	B	C	D
37%	35%	15%	14%

Table 4.6 – Overall responses to Q42Q

47% of the explanations given by participants for A/B responses to this question could be categorised as stating it was due to raised aural awareness, while 22% could be categorised as being due to receiving information from the composer. 70% answered positively to both Q51Q and Q42Q. This suggests that the majority of listeners, to some extent, engaged with the piece during the first and second listening. Nearly half of the reasons given for it being more interesting on the second listening were due to a greater sonic awareness, which had more than double the influence of the composer information on these answers. However, as can be seen in Table 4.7 nearly three quarters overall said the composer information aided their understanding.

YES (composer info helped)	NO	UNDECIDED
74%	16%	10%

Table 4.7 – Overall responses to Q32Q

This supports the results of the I/R project, which found that dramaturgic information can play a valuable role in offering a point of access for inexperienced listeners.

YES (exercises helped)	NO	UNDECIDED
75%	22%	3%

Table 4.8 – Overall responses to Q33Q

As Table 4.8 shows in total three quarters of participants felt the listening exercises aided their ability to listen closely. Overall 63% answered yes to this question and positively to Q51Q and Q42Q, meaning nearly 90% of the number who felt the listening exercises helped also found the piece interesting during the first two listenings. This suggests a connection between sonic awareness and appreciation. This effect was even more noticeable in the two most concentrated groups (Leicester High and Kingsley) with 78% of these listeners answering positively to all 3 of these questions. This implies a correlation between concentrated, attentive listening and appreciation of the piece.

4.1.4. The effectiveness of triangulation

Q23Q investigated the effect of reworking the piece on appreciation. As can be seen in Table 4.9, in total 72% found it more or slightly more interesting after reworking. 56% answered positively to this question as well as Q51Q, Q42Q (the other questions on appreciation) and Q33Q (whether listening exercises helped).

Nearly half (45%) of the 25% who were undecided or answered negatively to Q51Q found it more or slightly more interesting after reworking, suggesting that it addressed some of the problems these listeners experienced with the earlier iteration.

<i>A – More interesting</i> <i>B – Slightly more interesting</i> <i>C – No difference</i> <i>D – Less interesting</i>			
A	B	C	D
38%	34%	20%	8%

Table 4.9 – Overall responses to Q23Q

Figure 4.4 shows the percentages of positive responses for each group to both the questions on appreciation of ‘Night and Day’ in the first workshop. Trinity and Leicester High were played the same iteration and have similar levels of appreciation whereas Kingsley, which heard the final iteration, had 91% positive

responses and Leicester Grammar, which heard the earliest iteration (used in the main tests), has the lowest positive response to these questions (52%).

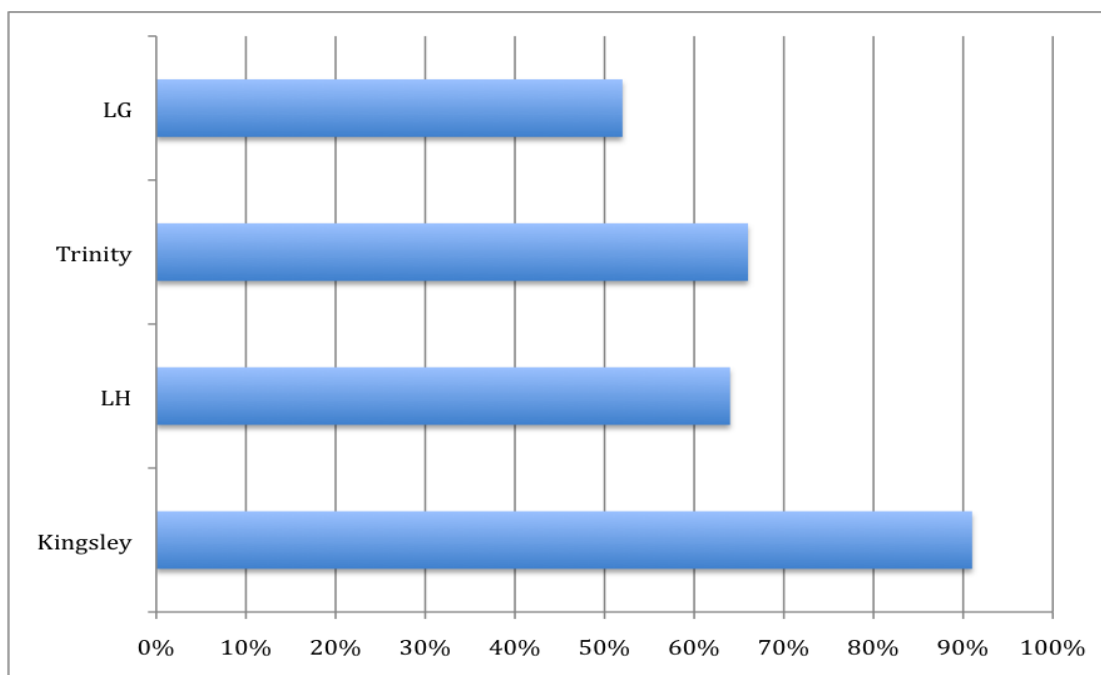


Figure 4.4 – Positive responses to Q51Q and Q42Q

Although it is difficult to compare due to the different listening situations for each group this implies that the triangulation process resulted in increased appreciation for each iteration, which is supported by the overall positive results for Q23Q. The version played in the first session at Kingsley was the reworked version used in the second sessions at Leicester high and Trinity. At Leicester High 93% thought this was more or slightly more interesting as well as 68% at Trinity, suggesting (in addition to the response from Kingsley) that this version (the last but one iteration) had strong approval from listeners.

However, triangulation is a means for aiding composers to communicate their intention more effectively rather than simply making alterations at the request of an audience. Therefore changes were made in reference to the composer intentions. For example, sections such as the beginning were enhanced in order to give the listener a deeper sense of immersion in that particular soundscape, in order to evoke the place in the imagination of the listener.

Nevertheless due to the unreliability of musical memory it is difficult to ascertain whether the positive responses are due to the actual changes, repeated listening (which was shown to aid appreciation in the I/R project (Weale, 2006:194)) or a more concentrated listening. For example R2LH felt the piece was 'calmer':

This piece was a more quieter, calmer piece. It was a bit more surreal and I could picture everything.

'Quieter' and 'calmer' suggest quite fundamental alterations that were not made to piece, although the participant does show signs of a more attentive listening in being able to 'picture everything'. It might be that this was the reason for their increased interest rather than the reworking, or even a combination of both. However, the fact that Q23Q had a consistently positive response from the majority of listeners across the groups and that appreciation of the piece seemed to increase with each iteration, seems to suggest that the reworking played a role in the increased interest.

4.1.5. Future access to sound-based music

The questions concerning future access are central to the project because if participants do not want to listen to this type of music again then heightened listening could not be presented as an effective access tool.

As can be seen in Tables 4.10 and 4.11, at the end of the workshops 66% answered positively, although this was a drop of 2% from responses to Q61Q at the end of the first session. The number of negative responses increased by 10% while the undecided dropped by 6%. In total 13% of those who answered yes to Q61Q then changed their answer to no for Q43Q, although over half of these answered positively to most of the other questions concerning appreciation and the listening exercises.

<i>Would you like to listen to some sound based music again in the future?</i>		
YES	NO	UNDECIDED
68%	23%	7%

Table 4.10 – Overall responses to Q61Q

YES	NO	UNDECIDED
66%	33%	1%

Table 4.11 – Overall responses to Q43Q

Table 4.12a shows the percentages of those listeners who answered positively to Q43Q and also answered positively to 1, 2, 3 or all 4 key questions. Table 4.12b shows the percentages of those listeners who answered negatively to Q43Q but in contrast answered positively to 1,2,3, or all 4 of these questions. The 4 questions concerned the effectiveness of the listening exercises, triangulation and appreciation of the piece and were:

- Whether the listening exercises helped (Q33Q)
- Whether it was more interesting after being reworked (Q23Q)
- Whether it was more interesting during the second listening (Q42Q)
- Whether they wanted to keep listening during the first listening (Q51Q)

So as is shown in table 4.12a, of the 66% who answered yes to Q43Q, 86% of those also said the listening exercises had been of help (57% overall). This being the view of the majority of those who would like to listen to sound-based music again, suggests that these types of exercises could play a useful role in widening access to sound-based music. 39% of all participants (or 60% of positive responses to Q43Q) answered positively to all 4 questions and Q43Q. Additionally as Table 4.12b shows, 56% of those who answered negatively to Q43Q said the listening exercises had helped while 28% answered positively to all 4 of these questions (9% of all participants).

	Plus Positive response to Q33Q	Plus Positive responses to Q33Q and Q23Q	Plus Positive responses to Q33Q, Q23Q and Q42Q	Plus Positive response to Q33Q, Q23Q, Q42Q and Q51Q
% Of positive responses to Q43Q	86%	68%	64%	60%
% Of all participants in total	57%	45%	42%	39%

Table 4.12a – Positive responses to Q43Q as well as positive responses to other key questions

	Plus Positive response to Q33Q	Plus Positive responses to Q33Q and Q23Q	Plus Positive responses to Q33Q, Q23Q and Q42Q	Plus Positive response to Q33Q, Q23Q, Q42Q and Q51Q
% Of negative responses to Q43Q	56%	48%	36%	28%
% Of all participants in total	18%	16%	12%	9%

Table 4.12b – Negative responses to Q43Q as well as positive responses to other key questions

This implies, as was evident in some of the uncertain responses shown in Chapter 3, that there might be a potential to change some participants' views concerning

future access. This is reinforced by the overall results to the questions analysed in 4.1.3. Due to the restriction of time all that was possible in the second session was to introduce similar listening exercises as the first session and listen to the reworked piece, therefore the students were required to sit and listen as in the first session. This was something teachers suggested they did not find engaging and that they usually found more participation was required to keep their interest (as described in 3.1.3 in relation to Leicester Grammar). There is other research which supports that asking students to just listen to a piece of music is not necessarily effective in building appreciation, as it is very different to how they normally engage with music outside of a formal educational setting (Woody, 2004:33). This is certainly something that should be considered by any future research regarding education and access as is discussed further in 4.3.

4.1.6. Overall responses to the key questions concerning appreciation and access

Table 4.13 shows the overall percentages of positive responses to the three questions on appreciation of the piece (Q51Q, Q42Q and Q23Q) as well as the two questions concerning future access (Q61Q and Q43Q). The majority of participants (76%) answered positively to 3 or more of these 5 questions while nearly two thirds of all participants (62%) answered positively to 4 or all 5 of these questions. It also shows that the proportion of those who found the listening exercises helped increased with the number of positive responses, for example 94% of those who answered positively to all 5 questions said that the listening exercises helped as opposed to 56% of those who answered negatively to 3 or more of these questions. This shows a connection between appreciation and finding the listening exercises beneficial. It also indicates that judging by these questions the majority of participants answered positively in general.

Q51Q, Q61Q, Q42Q, Q23Q, Q43Q - 5 questions on appreciation and access	Negative response to 3 or more	Positive response to 3 or more	Positive response to 4 or more	Positive response to all 5
	24%	76%	62%	42%
% of those listening exercises helped (%) overall in brackets)	56% (11%)	83% (63%)	89% (57%)	94% (39%)

Table 4.13 – Positive / negative responses to key questions concerning access and appreciation.

4.1.7. Blind and Visually impaired participants: A fascination with sound

Even though the small sample of useful data from this group means it can only be used as a reference point, the data that was collected appears to support the HL project hypothesis. The two most articulate participants demonstrated the key characteristics of heightened listening, were fascinated by sound and had a keen interest in the examples of E/A music that were played to them. As previous soundscape research has illustrated (Copeland, 2000), much can be learnt from the experience of the blind that could be useful in developing a listening strategy to enhance the appreciation of sound-based music.

The examples given in the descriptions of the mental maps by VI1 and VI2 also suggest that the senses do not work in isolation from each other but are, as Smalley remarks, ‘transmodal’ (Smalley, 2007:39). These descriptions are interesting in view of neurological research that shows that the visual cortex still

functions and is used by blind subjects (Sacks, 2008:175). They also illustrate the imaginative visual aspect of heightened listening and suggest its suitability for acousmatic music, which can be a 'quasi-visual... experience' (Smalley, 2007:40), and in particular soundscape music where an evocation of a particular place is important. Such transmodality is evident, to a lesser extent, in the visual references made by many participants in the main tests when trying to describe sounds or aspects of the piece.

The amount by which listening informs the other senses and provides overall perception with a richness of detail might influence a listener's level of appreciation for soundscape works. This is a heightened listening skill that, as is shown by the answers from VI1 and VI2, needs time and practice in order to develop. A number of studies have indicated that blindness (particularly from infancy) leads to a greater awareness of sound, which often results in advanced musical abilities and/or a greater interest in conventional music (Sacks, 2008:175). The results from the HL project also suggest that this could apply, for some blind listeners, to an interest in E/A music.

4.2. General conclusions and overall themes in appreciation

4.2.1. Categories and themes emerging from analysis of the results

Themes emerged throughout the workshops and Table 4.14 shows a breakdown of the explanations given for why listeners would like to listen to sound-based music in the future. The first category includes answers that said they wanted to hear more as it was unlike anything they had heard before. The second category concerns answers in relation to greater sonic awareness. The third contains answers where listeners enjoyed the narrative aspects of the piece. The fourth includes answers that enjoyed the imaginative and creative aspects of sound-based music while the fifth category concerns answers that appreciated the sense of being transported to a different place, although there was further evidence of this in response to other questions. The remaining 22% either did not explain their answer or said something general such as 'because I find it

interesting'. As can be seen the most common answer was in connection with raised aural awareness with nearly a quarter of answers giving this as a reason.

1.Strange, new, different, unique	2.Raised aural awareness	3.Narrative	4.Imagination/creativity	5.Sense of Place
16%	24%	16%	15%	7%

Table 4.14 - Categories for positive responses to Q61Q and Q43Q

In particular categories 2 to 5 all exhibit aspects that can be related to heightened listening, and indicate areas that engaged the listeners that might be helpful in future research. Through raised aural awareness and use of the imagination it is possible to develop a sense of place. These 3 categories are essential elements in heightened listening. Narratives are used in a number of soundscape or real world pieces but will be often difficult to understand without imagination, aural awareness or a sense of place. Therefore this demonstrates how developing these skills might enhance an appreciation of real world works.

Another theme that recurred throughout the different workshops was for science fiction / horror / supernatural references, overall 20% of listeners made this kind of comment in relation to the piece. As already mentioned, this has been observed in other studies and might just be connected to the sounds being similar to those that listeners have only previously encountered in the cinema. Additionally, as Andra McCartney remarks, unfamiliarity can sometimes breed fear (McCartney, 2002:46). Similarly, Katharine Norman explains that from the 'soundtrack for *The Forbidden Planet* onwards, electronic music – in particular synthetic timbre – has impersonated alien worlds in film. Those sounds are so strange that we just can't envisage where they come from' (Norman, 2004:32).

Research has previously shown a link between familiarity and appreciation of music (Hargreaves, 1984) and a number of the horror references were followed by negative responses. It might be that the more experienced listeners become the less likely they are to make science fiction or cinematic allusions. The term 'Cinema

for the Ear' is often used in connection with E/A music and as Norman remarks it does not always seem appropriate, partly as the imaginative links or metaphors listeners create are often very different, but also as it can reduce electronic sound to being 'a musical soundtrack for a silent (and invisible) narrative' (Norman, 2004:32).

4.2.2. Final Conclusions

After analysis and evaluation the overall results indicate that raising aural awareness through listening exercises can enhance the appreciation of real world sound-based music. That the majority of participants engaged with the piece, said they would like to listen again to sound-based music and found the listening exercises useful is evidence of this. That 86% of those who said they would like to listen to sound-based music again also said that the exercises aided their ability to listen closely to the sounds highlights this connection between sonic awareness and appreciation. It seems clear that the more concentrated and focused the groups were, the greater the interest in the piece, it also seems likely that introducing participation would aid this concentration. At Leicester High and Kingsley greater commitment to the listening exercises and a resulting 'sense of place' produced higher levels of appreciation. This was also reflected in results at Leicester Grammar and Trinity, once concentration levels dropped then so did interest in the piece. Leicester High and Kingsley were all girls schools but no significant gender difference was apparent in the mixed schools. Therefore it seems likely that any differences between the groups were due to other factors, such as the listening situation, rather than gender.

Despite high levels of appreciation participants from Leicester High were less positive in regards to future access, but a number of answers indicate there is a potential to change this view. However, at Kingsley the responses concerning future access were extremely positive. It is difficult to explain for sure (other than the reasons given in 3.4.3) why the reactions were different, but a number of different variables, as described in Chapter 3, influenced answers in each workshop.

Additionally measuring appreciation is not always straightforward and there are limitations to what any qualitative questionnaire can discover about how respondents really feel, especially when asking about an experience as subjective as listening to music. As has been noted by other studies on music appreciation (Kopiez and Lehmann, 2008:136) questions that offer a scaled choice (such as Q42Q and Q23Q) might be influenced by what participants think the workshop co-ordinator (or teacher) might want them to answer, rather than their own subjective interpretation. It could be that this explains the relatively few D (less interesting) answers to these questions, although as there were a higher proportion of these in the Beta tests this seems unlikely. One solution to this might be to create a method where participants can give answers to these types of questions without knowing the real intention of them (ibid), although such a method would have been difficult to implement for an educational study such as the HL project. However, even with such factors influencing the data, when considering the current low profile of E/A music amongst young people, these results suggest that, if aided by an educational approach that promotes participation and sonic awareness, there is a clear potential for developing more interest in real world E/A music.

4.3. Future research

4.3.1. The importance of triangulation

Triangulation was a principle point of study for the HL project and as discussed in 4.1.4, the data suggests that this process resulted in a work that was more accessible for an inexperienced audience, while reaction to it appeared to improve with each iteration. It might be a useful practice for future research concerned with the accessibility of E/A music to include a process of this type within its methodology.

From a compositional perspective it is constructive to receive feedback from an audience outside of the electroacoustic community and be required to account for the concerns of listeners whose views might be different to those in

that community. This allows for a more open approach that helps to communicate the vision of the composer more successfully to a wider audience. It is not often that composers are required to present their work to an inexperienced and sometimes unsympathetic audience for feedback. In terms of producing works that might be more accessible, this could be a useful process for many E/A composers rather than, as it appears is often the case (see section 1.1.4), remaining in the familiar confines of a supportive academic world.

This does not have to mean diluting or ‘dumbing down’ the piece, but it provides the composer, whose perception of a work can become distorted after many hours of analytical listening in the studio, with an understanding of how other listeners might perceive it. This can be very useful in helping to share with an audience what the work is trying to convey, or to create a point of contact through a common understanding between the composer and listener. After all, as Norman comments in relation to organising sound (or anything): ‘The process of organisation is defined by... the working towards a meaningful whole. What we are organising - it’s immaterial. But I hope that it will mean something to both of us.’ (Norman, 2010:124).

4.3.2. The role of participation in aiding appreciation and developing listening skills

Conversations with teachers, as well as observing the loss of concentration among some listeners during the workshops, suggest that the results, particularly in terms of future access, could have been more convincing given extra time and greater participation. The encouraging responses in other projects where this has been put into practice reinforces this, not only at De Montfort University (Therapontos, 2011) but also in other projects such as Anna Maria Higgins’ research with 16-17 year old music students, which proposed:

‘That comprehension of and focused listening to electroacoustic music can be better achieved through composing’ (Higgins, 2004:15).

Even simple methods such as keeping a sound journal for a period of time can produce a deeper level of engagement and understanding, as demonstrated with students as part of a project in Stockholm designed to raise aural awareness (McGinley, 2001:25). Activities that involve more interaction such as soundwalks, drawing sound symbols or sound maps of the local area are all possible teaching methods for encouraging deeper sonic awareness. The imagination can play an important role in this and this is expanded on in 4.3.3.

The potential for widening access through creativity appears promising, but, as many of these activities engage compositional tools, it does raise questions about how much an interest in E/A music is related to an interest in composing. This also brings to mind the survey of E/A composers by Rob Weale, which discovered that many prefer composing or listening to their own work than to the work of others (Weale, 2008:3). However, as detailed in 4.1.4 and discussed further in 4.3.1, results from the HL project indicate that triangulation can be an effective way of creating music where the concerns and abilities of the listener are taken into account.

4.3.3. Extending heightened listening through the imagination

As defined in 1.3.4 heightened listening uses imaginative associations and can aid the ability to uncover latent metaphors that are contained within the sonic world. There could be a number of applications for this in future research. These could include the role of memory in developing metaphors for sound-based pieces, the potential therapeutic use of sound and associations or as part of a pedagogical project to introduce young people to E/A music through participatory exercises. These are expanded on in the following section.

Heightened listening could be developed as a tool for composers and listeners to reveal or understand meanings in sound-based works. Anamnesis is when a memory or past situation is evoked by sound (Augoyard and Torgue, 2005:21). Although this is frequently subjective there are common aspects, which are often cultural. There are many shared experiences that can produce archetypal

anamneses, which are common references produced by sounds for people from a particular culture (ibid:23). The fact that similar answers were repeated across the different groups in answer to Q11Q demonstrates this in practice. These archetypes can be useful in communicating a meaning through sound, but as discussed in 4.1 their use does not necessarily need to be realistic and Augoyard and Torgue also note this:

‘People working in sonic effects for film know this very well; they select useful sound for the effect on the audience rather than for a realistic reference to the recorded scene’ (ibid).

Anamnesis can be quite powerful with the capability to transport a listener across time and space, even more so when related to the ‘trans-modal’ nature of sensory perception as discussed in 4.1.7. A sound might trigger a memory that is visual, haptic or olfactory in nature or even multi-modal.

Some of the therapeutic potential of this was demonstrated by a workshop conducted during the beta test phase of the HL project at a home for the visually impaired run by VISTA. The residents were all elderly and some had other disabilities. It was clear that they would have difficulties in completing the questionnaires especially as there were few carers available to help. As an alternative various sounds used in the other workshops were played to them and they were asked to respond verbally. In reaction to the sounds of the sea, comments were made about their realism and how they reminded them of holidays from their past. The same was true of the sounds recorded at Leicester market; these brought back memories of their daily lives before they had moved to the home. It was clear that this was a pleasurable experience for those involved and the value of this could be enormous to people who, for whatever reason, do not have access to environments such as the ocean or woodlands.

Additionally a number of participants in the main tests remarked on the calming effect of listening. For example this was R12LH’s response to Q43Q:

Yes I would as it’s quite relaxing and it expresses words in the sounds.

This suggests that for this participant the act of listening to sound-based music was a relaxing and imaginative experience. This might have been the result of raised awareness, the sounds themselves or a combination of both. It could be that developing these listening skills will have general benefits in everyday life that correspond to elements of the personal, social, health and economic wellbeing programme of study within the national curriculum. Additionally, as evidenced by the experience in the VISTA residential home, these skills might be used to enrich people's lives in the wider community; there is no doubt that for John Hull discovering the world through sound was at times 'an experience of great beauty' (Hull, 1990:23). Greater aural awareness could also improve the appreciation of other types of music.

R12LH's remark above also indicates an educational potential for future research. The words that were 'expressed... in the sounds' must have either been triggered through associations or are a reference to the composer information. As is explained later in 4.3, narrative emerged as a theme in explanations for positive responses. The use of a narrative is one that can be understood by children and captures their imagination, which can provide a way for them to further engage with and explore the sounds. An interest in the creative possibilities of sound-based music and how this can stimulate the imagination was evident in responses given throughout the workshops. This could be used as a basis for future research in schools that could explore sounds, the imagination and metaphors through developing heightened listening and compositional skills. This would include the creative and participatory elements that would be necessary to fully engage the students, as discussed in 4.2.1.

Further research in these areas, exploring other applications or benefits that heightened listening might have and which would possibly need to be cross disciplinary in nature, could also in the long term help generate further interest in E/A music.

5. Appendices

5.1. Appendix 1 – Final Questionnaires

Please complete the following -

Name:

Age:

Sex (m/f):

What is (are) your general musical taste(s)?:

After First Listening – please give as much detail as possible.

1) Which sounds did you recognise in the composition?

2) Did you notice any of the sounds coming from different parts of the room? Can you describe which?

3) What parts did you find most interesting?

4) What parts did you find least interesting?

5) Overall did the composition make you want to keep listening or was it uninteresting? Can you please explain why?

6) Would you like to listen to some sound based music again in the future?

If yes, why? If no, why not?

After 2nd Listening

Please complete the following – please give as much detail as possible.

1) Please describe anything new you noticed by listening a second time.

2) Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)? If so, what kind of place?

3) Did the title and information from the composer help you to understand the composition?

If yes, how? If no, why not?

4) After doing the listening exercises and listening to the piece again, did you find it (please circle) –

- A – More interesting
- B – Slightly more interesting
- C – No difference
- D – Less interesting

If less or more, why do you think that was? If no difference, why do you think your opinion hasn't changed?

After 3rd listening

Please complete the following – please give as much detail as possible.

NAME:

1) What differences did you notice from last time you heard the composition?

2) Did you find it (please circle) –

A – More interesting

B – Slightly more interesting

C – No difference

D – Less interesting

If less or more do you what changed your view? If no difference why do you think that was?

3) Do you think the listening exercises in each session have helped you to listen more closely to the sounds? Y/N (please circle).

If yes, how did this affect how you felt about the composition?

If no, why do you think they didn't help?

4) Now you have completed the workshops and done the listening exercises, would you like to listen to some sound based music again in the future?

If yes, why? If no, why not?

5.2. Appendix 2 – Consent forms

The Heightened Listening Workshop

The following text gives an overview of the content of the Workshop. The first session will last approximately 1 hour while the second will last around 40 minutes.

The Workshop will involve the following -

- Listening to a piece of electroacoustic music and completing two questionnaires.
- Overview of heightened listening, electroacoustic music, the listening experience of the visually impaired as well as the aims of the research.
- Listening exercises to help develop heightened listening skills.

Information for parents

The Research Project

The project will investigate whether heightened listening skills, usually associated with the visually impaired, can be learnt by young people and used to aid the appreciation of electroacoustic music (i.e. sound based music, any sound can potentially be used as musical material).

This project aims to develop students' aural (listening) skills, through participation in different exercises.

Please note that workshop discussions may be recorded. However, the recordings will not be released with the research data. Participant data (which will be anonymous) may be used in research-based publications and talks.

In accordance with De Montfort University's policy on human research ethics, your rights to privacy and confidentiality in relation to any material and practices arising from the research will be protected.

David Holland
(Project Researcher)

Thank you for agreeing to participate in the heightened listening research project, which has been approved by the Faculty of Humanities' Human Research Ethics Committee.

In accordance with De Montfort University's policy on human research ethics, I should like to point out that your rights to privacy and confidentiality in relation to any material and practices arising from the research will be protected and the identities of participants will not be revealed. You will also therefore, be:

- Provided with the written details of the objectives of the research and of their participation in it (see first page)
- Invited to give their written consent, by countersigning and returning this letter, regarding their voluntary participation in the research
- Free to withdraw from the research at any point without having to offer any reasons for doing so
- Given the right to see any written or audio records relating to your involvement in the research
- Fully protected in regard to safety according to the university's best practice on risk assessment

Yours sincerely,

David Holland
(Project Researcher)

Please countersign the agreement to indicate that you and your child understand your involvement in the research, and to give consent to your child's voluntary participation. As participants are minors, a signature is *required* from a parent or legal guardian of the participant:

..... (Parent/Guardian)

For blind or visually impaired participants

The Heightened Listening Workshop

The following text gives an overview of the content of the Workshop. The session will last approximately 45 minutes to 1 hour.

The Workshop will involve the following -

- Listening to a piece of electroacoustic music and completing two questionnaires.
- Overview of heightened listening, electroacoustic music and the aims of the research.
- Listening exercises to help explore heightened listening skills.

The Research Project

The project will investigate whether heightened listening skills, usually associated with the visually impaired, can aid the appreciation of electroacoustic music (i.e. sound based music, any sound can potentially be used as musical material) and be learnt by young sighted people.

Please note that workshop discussions may be recorded. However, the recordings will not be released with the research data. Participant data (which will be anonymous) may be used in research-based publications and talks.

In accordance with De Montfort University's policy on human research ethics, your rights to privacy and confidentiality in relation to any material and practices arising from the research will be protected.

David Holland
(Project Researcher)

Thank you for agreeing to participate in the heightened listening research project, which has been approved by the Faculty of Humanities' Human Research Ethics Committee.

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- Provided with the written details of the objectives of the research and of their participation in it (see first page)
- Invited to give their written consent, by countersigning and returning this letter, regarding their voluntary participation in the research
- Free to withdraw from the research at any point without having to offer any reasons for doing so
- Given the right to see any written or audio records relating to your involvement in the research
- Fully protected in regard to safety according to the university's best practice on risk assessment

Yours sincerely,

David Holland
(Project Researcher)

Please sign the agreement to indicate that you understand your involvement in the research and give consent to voluntary participation.

..... (Participants signature)

5.3. Appendix 3 – Composer Information

Information about the music

Title – Night and Day

Late one evening last summer I heard the sound of frogs coming from a nearby pond, while the sound of crickets and other insects seemed to surround me. In the dark they sounded almost alien. The human sounds of the day had virtually disappeared; nature seemed to be taking over. I felt this was in contrast to my usual experience of the world where sounds produced by human beings and machines that they have created increasingly seem to be taking over nature.

In this piece I wanted to create a sense of place within the real landscape, which is then transformed (influenced by the way that we have transformed many parts of the natural world) through more abstract sounds.

The piece begins with the sounds of night and ends with the sound of daybreak. I was interested in the contrast between the two. Other contrasts include one between natural sounds and mechanical sounds and another between real and abstract sounds. The piece explores the fight for survival in nature, and the role it plays as the driving force in the evolution of all life.

5.4. Appendix 4 – Tables and charts

Section 3.1 – Leicester Grammar

Sounds identified	Number of listeners
Helicopter/plane	22
Birds	16
Crickets/Insects	15
Dogs	15
Heartbeat	14
Ducks	12
Rats/mice	11
Train	7
Frogs	6
Motor vehicle	5
Ghosts	5
Bats	5
Snake	4
Voices	4
UFO	3
Jungle/forest sounds	3
Pigs	3
Monkeys	3
Wind/storm	3
Cats	2
Pigeons	2
Owl	2
Electric saw	2
Drums	2
Croaking	2
Nature sounds	2
Air raid siren	1
Howls	1
Lawn mower	1
Laughter	1

Table 3.1 – responses to Q11Q at Leicester Grammar (LG)- *Which sounds did you recognise in the composition?*

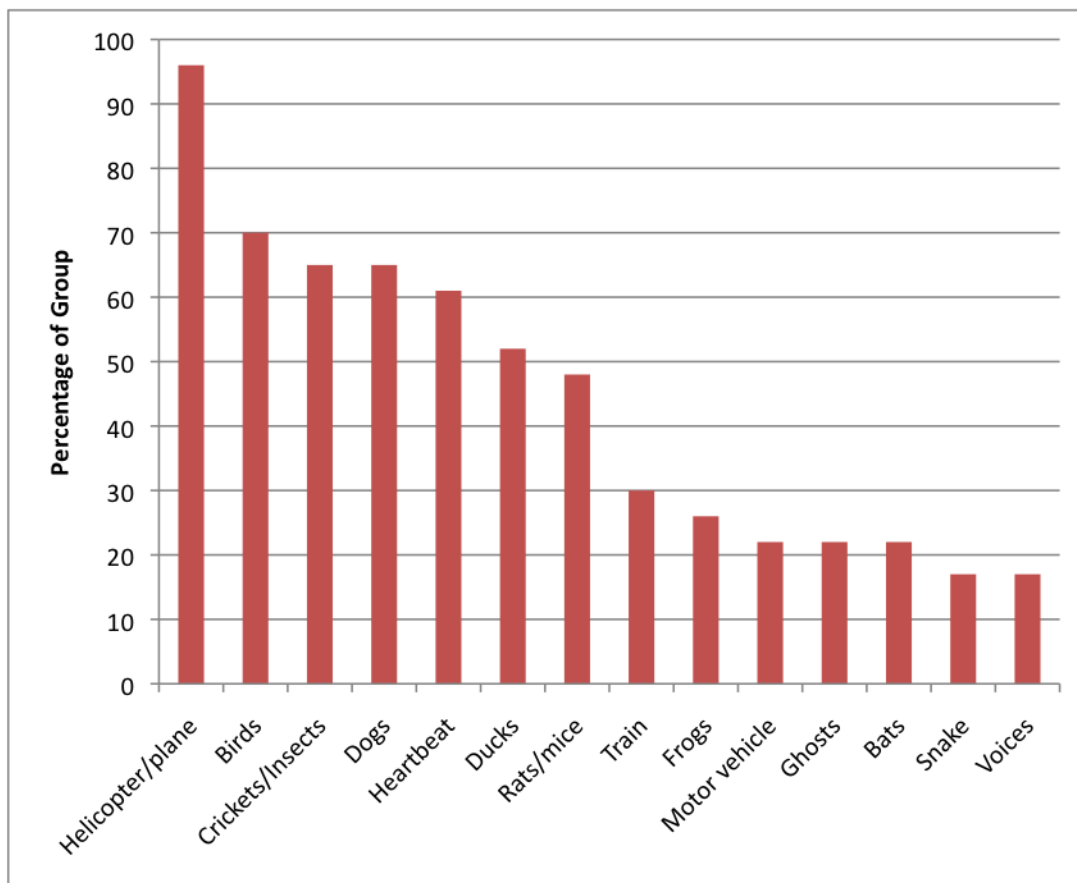


Figure 3.1 – Most Commonly recognised sounds at Leicester Grammar

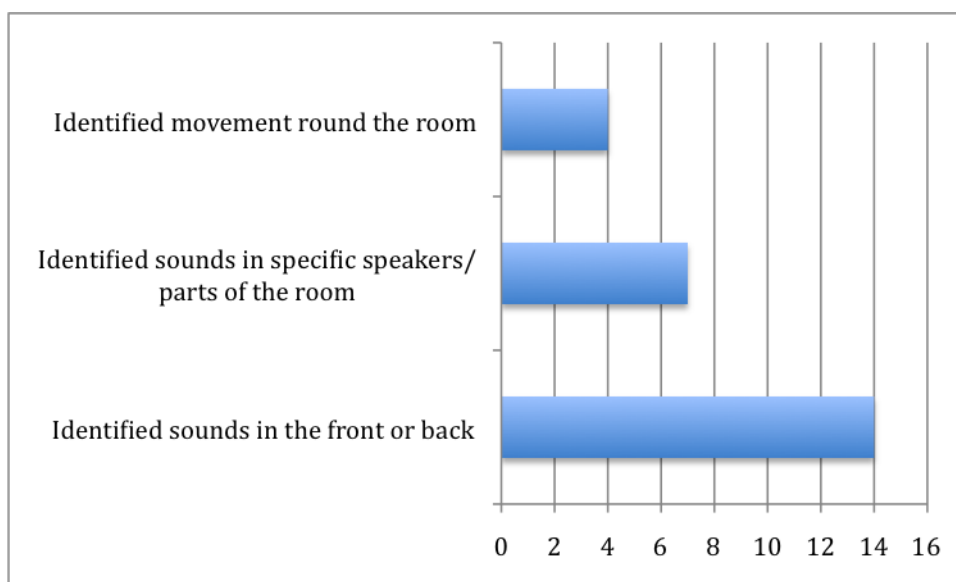


Figure 3.2 – Categories for common responses to Q21Q at Leicester Grammar.

Helicopters/planes	11
Loud middle section	7
Ghosts/spooky parts/ UFO	4
Birds	3
Animals	3
Heartbeat	2

Table 3.2 – LG Responses to Q31Q - *What parts did you find most interesting?*

Birds	7
Beginning section	7
Insects/ Crickets/ Frogs	4
Rats	3
Plane/helicopter	2
Section with heartbeats and voices	1

Table 3.3 – LG Responses to Q41Q - *What parts did you find least interesting?*

Jungle/forest/woods	8
Farmyard	2
Airport	2
Pond	2

Table 3.4 – LG Responses to Q22Q - *Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)? If so, what kind of place?*

Section 3.2 - Trinity

Water	13
Birds	13
Crickets/Insects	13
Helicopter / Plane	12
Motor Vehicles	8
Drum/heartbeat	8
Snake	7
Voices/singing/screaming	7
Animals	4
Train	4
Ducks	4
Drill/jackhammer	3
Wolves/dogs	3
Demons	2
Swamp/mud	2
Cats	2
Lawnmower	2
Sheep	1
Guns	1
Bombs	1
Metal saw	1
Cows	1
Toads	1
Frogs	1
Synthpad	1
Pigs	1
Hoover	1
Wind	1
Swimming pool echoes	1
Monkeys	1
Thunder	1

Table 3.5 – Responses from Trinity (T) to Q11Q - Which sounds did you recognise in the composition?

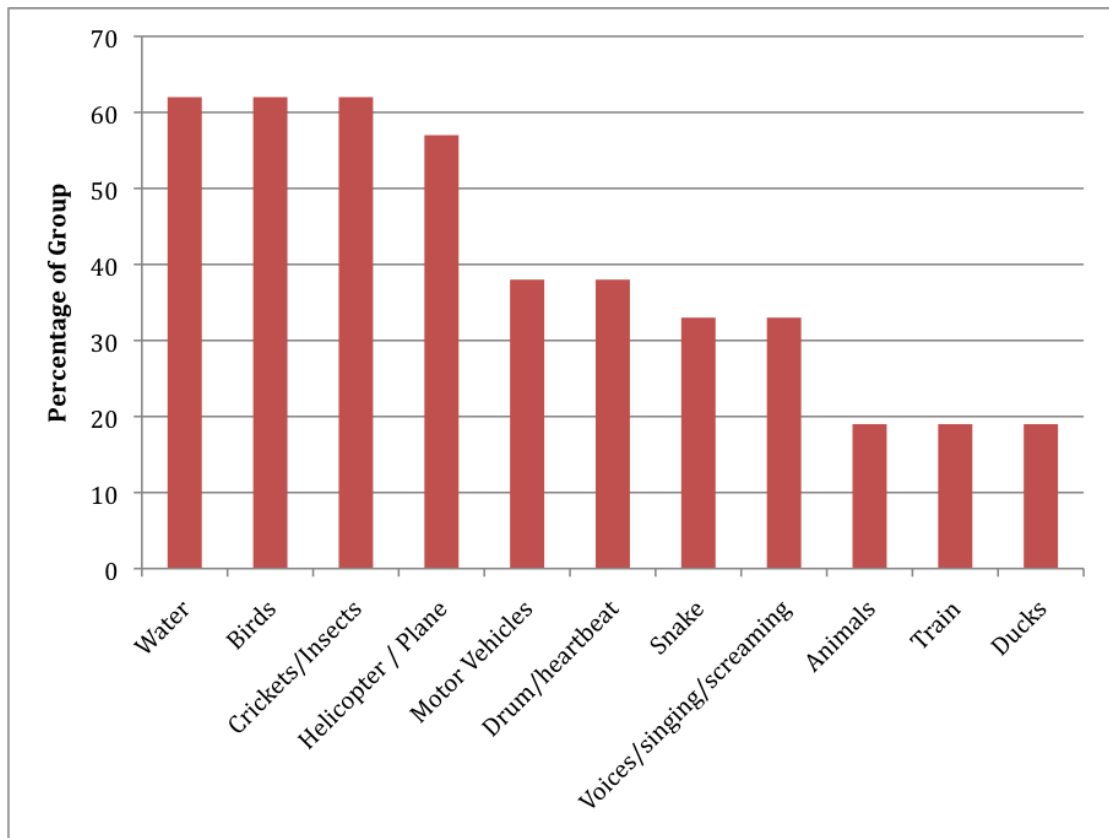


Figure 3.3 – Most Commonly recognised sounds at Trinity.

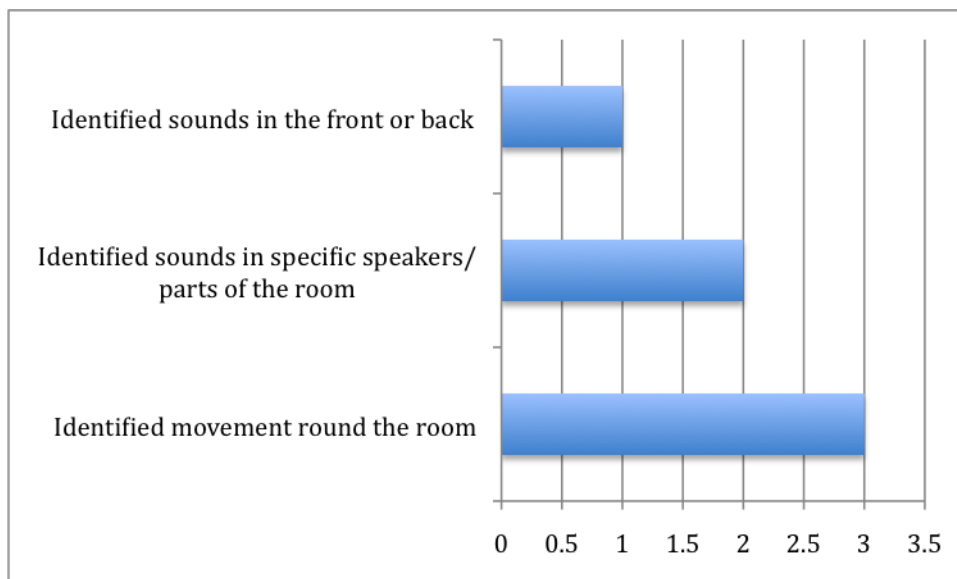


Figure 3.4 – Categories for common responses to Q21Q at Trinity - *Did you notice any of the sounds coming from different parts of the room? Can you describe which?*

Helicopter/aircraft	8
Middle	3
Nature	2
Demons	2
Water	2
Heartbeat	2
Insects	2
End	1

Table 3.6 T Responses to Q31Q - *What parts did you find most interesting?*

None of it	5
Motor vehicle	4
Beginning	3
Heartbeats	2
Wolves/dog	2
Insects	2
Water	1
Animals	1
Birds	1

Table 3.7 T responses to Q41Q - *What parts did you find least interesting?*

Section 3.3 – Leicester High

Helicopter/plane	12
Water	11
Birds	11
Insects	5
Motor vehicle	5
Duck	4
Animals	3
Snakes	3
Heartbeat	3
Thumps	2
Shooting	2
Wind	2
Frogs	2
Rain forest	2
Drums	2
Dogs	2
Screams	2
Underwater	2
Drilling	1
Ringling	1
Squelching	1
Hissing	1
Rain	1
Owls	1
Diver	1
Alien	1
Lizards	1
Thunder	1
Trains	1
Saw	1
Parrot	1
Water gargled	1
Lawn Mower	1
Muddy puddle	1
Bubbles	1
Fish Squeaks	1

Table 3.8 – Leicester High (LH) responses to Q11Q - Which sounds did you recognise in the composition?

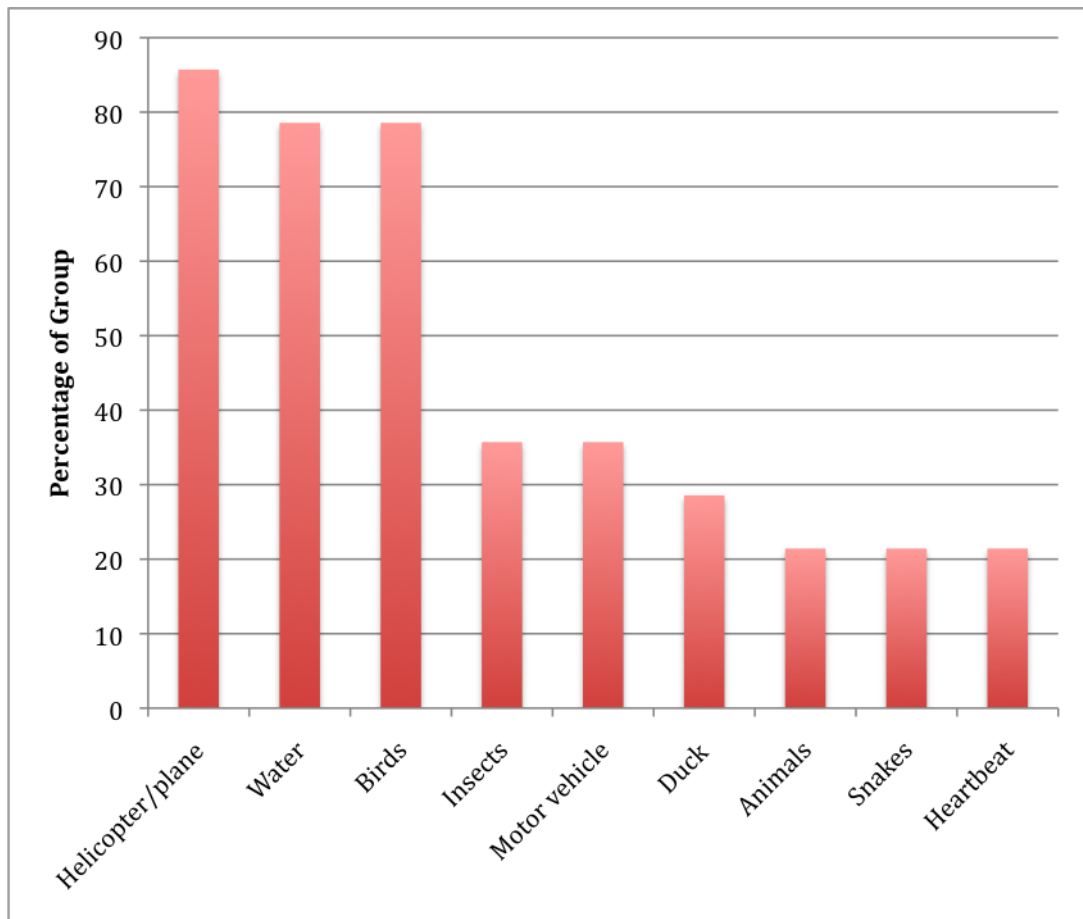


Figure 3.5 – Most commonly recognised sounds at Leicester High

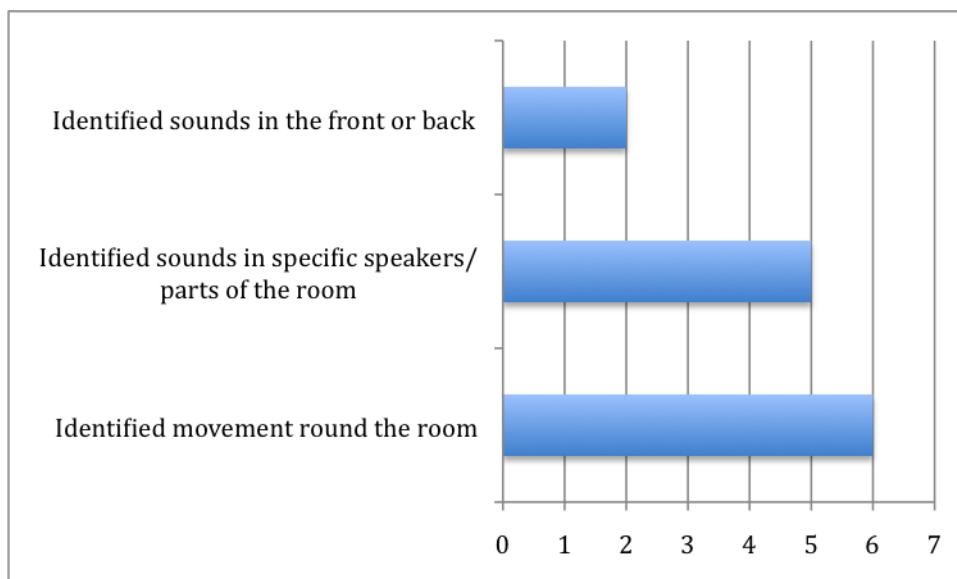


Figure 3.6 – Categories for common responses to Q21Q at Leicester High.

Planes/helicopter	7
Ducks	2
Animals	2
Middle section	2

Table 3.9 – LH responses to Q31Q - *What parts did you find most interesting?*

Birds/end section	6
Water	3
Drilling	2

Table 3.10 – LH responses to Q41Q - *What parts did you find least interesting?*

Rainforest/forest or woodlands	6 (43%)
Pond/stream	3 (21%)
Nearby road	2 (14%)

Table 3.11 – LH responses to Q22Q - *Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)? If so, what kind of place?*

Section 3.4 – Kingsley

Helicopter/planes	21
Water/underwater	19
Birds	15
Insects/crickets	10
Animals	10
Motor vehicles	8
Snakes	6
Frogs/toads	5
Dogs	5
Heartbeat	4
Drums	4
Pigeon	3
Screaming	3
Train	3
Whales/dolphin	2
Something eating things	2
Bells	1
Beating of wings	1
Children	1
Mice	1
Wind	1
Dragonfly	1
Cats	1

Table 3.12 – Kingsley responses to Q11Q - Which sounds did you recognise in the composition?

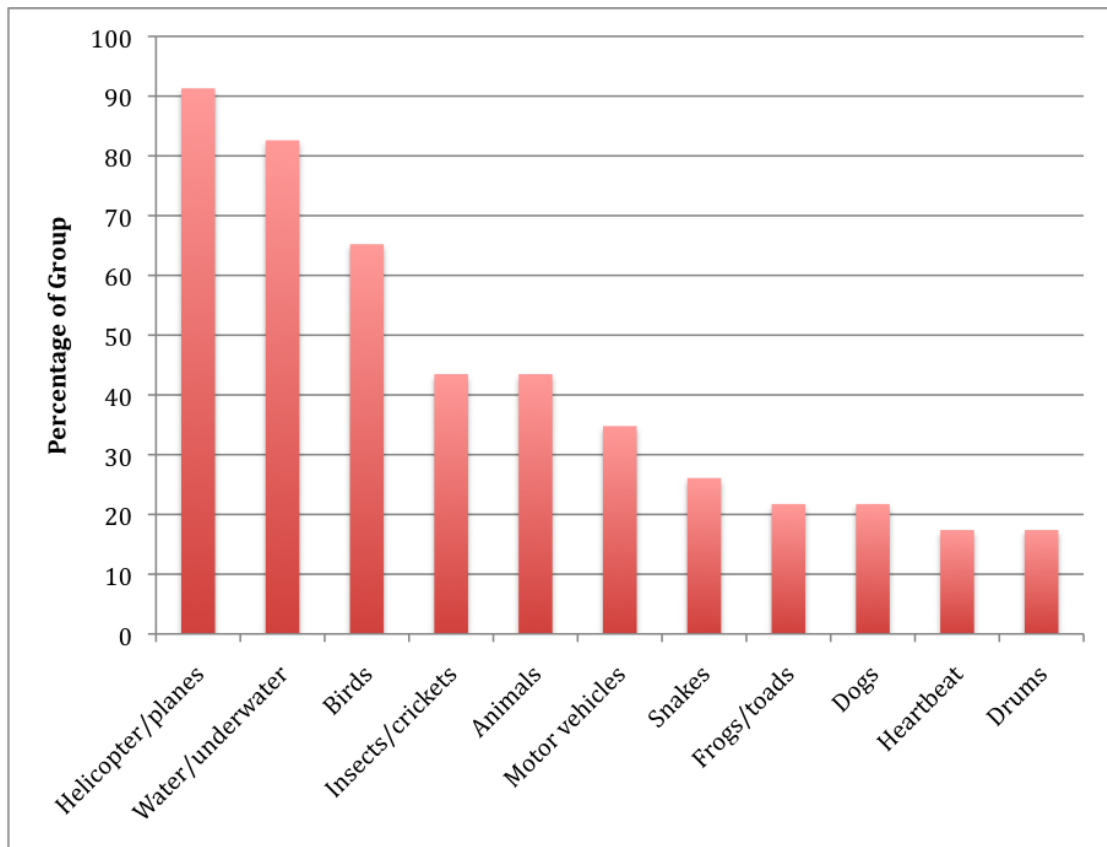


Figure 3.7 – Most commonly recognised sounds at Kingsley (K).

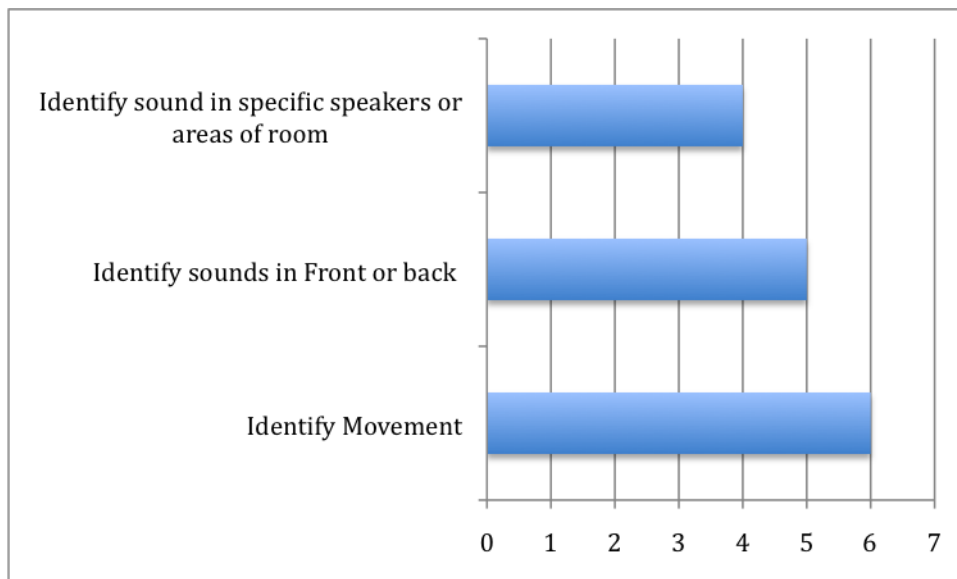


Figure 3.8 – Categories for common responses to Q21Q at Kingsley - *Did you notice any of the sounds coming from different parts of the room? Can you describe which?*

Water/underwater	14
Planes/helicopters	8
Animals/wildlife	6
Drum/heartbeats	3
Loud parts	3
Eerie/quieter section	2
Train	2
Snakes	2
Dynamics	1

Table 3.13 – K responses to Q31Q - *What parts did you find most interesting?*

None of it	6
Birds	6
Helicopter/planes	4
Loud bit	3
Beginning	1
Underwater	1
Wind	1
Snakes	1

Table 3.14 - K responses to Q41Q - *What parts did you find least interesting?*

Rainforest/Wood/Jungle	8
River/pond/lake	8
Garden	3
Airport	2
Road	1
Sea	1
Car race course	1

Table 3.15 – K responses to Q22Q - *Did you get a sense of the kind of place the sounds were (for example they might appear to be inside or outside)? If so, what kind of place?*

Pitched/more musical	6
Birds	6
Helicopter/planes	4
Longer	3

Table 3.16 – K common responses to Q13Q - *What differences did you notice from last time you heard the composition?*

5.5. Appendix 5 – Participant comments

Section 3.1

Sub-Section 3.1.1

Comment:

1

R14LG

The train came from the back of the room. The birds chirping came from the front of the room. The airplane was everywhere around the room.

2

R5LG

The dogs barking (right speaker) and birds chirping (left speaker), aeroplane in all speakers.

3

R3LG

It was as if I was in a jungle, it was like I was surrounded and the music was everywhere.

4

R9LG

A train worked its way around the room, cricket went across the room.

5

R2LG:

The parts where there were lots of things making noise at the same time you had to listen carefully to hear all of them. I liked it when it sounded like a train was coming towards you because it felt more real than the other sounds.

6

R12LG

The spooky bits! It makes me imagine more.

7

R17LG

I found the sort of screeching noises quite interesting and the UFO noises they were different to the noises you hear in regular music.

8

R3LG:

I thought that the beginning was least interesting because it was a bit predictable, it sounded like an everyday park.

9

R11LG

I found it quite boring because they are sounds you hear all the time. However, I think it was quite interesting because they are sounds that you might not always notice.

10

R3LG

It made me want to keep listening because the end sounds were alien to me and I didn't know what I was hearing. Also I didn't know what would happen next.

11

R23LG

I wanted to keep listening because it went from one area and then transported you to another. I wanted to know where it would take me next.

12

R12LG

I wanted to keep listening because something new kept coming and it created new scenes.

13

R15LG

Yes, I would because I think it is quite interesting as some of these sounds you would block out in daily life.

14

R8LG

Yes, because (especially with surround sound) the sounds were almost making a story, it was very well put together

15

R23LG

Yes because there is no limit to the sounds you can make in it. It really helps you imagine you're somewhere else.

16

R18LG

Not really, because it doesn't have any cool rhythms or anything, or clever lyrics, and they are the main reason I listen to music in the first place.

Subsection 3.1.2

1

R9LG

I realized that there were a lot more sounds than I thought when I listened to it the first time.

2

R23LG

Everything was louder and the sounds of insects came one after the other instead of at the same time.

3

R2LG

Outside, starting with day and then it became a dark scary night. You could tell it was a scary atmosphere because the heartbeat got faster.

4

R17LG

Most of the sort of scary sounds sounded like they were echoing so they might have been in a cave or something and the rest sounded like they were outside.

5

R3LG

It was like I was walking through a field it was dark and there were trees to one side of me and a pond to my other side and I could see the moon.

6

R10LG

It helped me a bit but I didn't think it changed from night to day I just thought it was either night or day but I didn't think it changed.

7

R21LG

Yes because it gives a picture of what is happening. The title is excellent because it tells you the theme but in a peculiar way.

8

R23LG

I think it only helped a bit but I think it ruined your imagination of what was happening, you want to think one thing but that description just forces you to think of something else.

9

R11LG:

D – I think it was less interesting because I had already heard it so I started to get bored. However I would say that in some ways I found it slightly more interesting, because I had a better idea of what was going on.

10

R4LG:

A – I think this because I became more concentrated, so I could focus on the sounds and listen deeper into it

11

R5LG:

B – I felt I was more concentrated, so I could analyse the sounds more.

Subsection 3.1.3

1

R15LG

It was more realistic and it felt like you were there.

2

R8LG

A – I have changed my view because there were many more types of sounds and it made it feel realistic.

3

R17LG

D – It is like when you play a song too much and it gets irritating because you already know what is going to happen.

4

R16LG

B – because the beginning was more interesting & I liked the end because it was like Harry Potter & then calmed down.

5

R2LG

Yes because when you close your eyes your other senses are better and because the room is so quiet when you do it you can concentrate on just sounds. The more you listen the more sounds you notice.

6

R23LG

Yes, I think it helped me notice the background sounds so I had a better idea of what was going on. I had a better picture in my head.

Section 3.2

Subsection 3.2.1

1

R15T

I found it very interesting all the natural sounds and the man made sounds I like the mix.

2

R14T

I think it was good and would like to keep listening because I don't usually listen carefully to lots of things.

3

R13T

Yes if it was more interesting.

4

R5T

Yes because it's really heart racing.

5

R6T

Yes because I enjoy peaceful music.

6

R15T

No because I do like the sounds but I prefer other music and sounds.

Subsection 3.2.2

1

R17T:

Consuming bells towering over like a sheet of cloth from front left corner.

2

R17T

Outside, then a nightmare cave, then nightmare outside.

3

R20T

Yes because then I understood what parts were there and why

4

R2T:

B – I think because I listened to it more with my eyes closed I can imagine it and see it.

Subsection 3.2.3

1

R14T:

The bit where you go underwater and you hear the muffled sound of wildlife above you. Also the bit at the end sounded more intense because of the build up.

2

R2T:

When I heard the song the second time I heard it was in more detail and more background noises.

3

R13T

It was a lot better than before, I liked the crescendo at the end.

4

R7T

No – it did help but I could do it before more.

5

R6T

Yes – It helps me because I can listen to other things out of school.

6

R15T

Yes – It made me think more about detailed sounds that daily I don't notice.

7

R17T

It helped me listen to sounds that are quiet around louder sounds.

Section 3.3

Subsection 3.3.1

1

R1LH:

I didn't really notice which sounds, but realized they were coming from different areas.

2

R10LH:

The birds came from the one nearest the desk, the zoom of the planes first came from the one behind us on the left, but then the zoom of the plane was the one diagonally across the room. The water came from the one nearest the desk near the end.

3

R8LH:

Also the helicopter going over the top (it seemed as if it flew over you)

4

R9LH

The middle section, when all sorts of sounds came in. They were quite interesting sounds, some which you don't normally hear.

5

R5LH:

Yes it was very interesting as I could hear sounds that I didn't really hear before or things I don't really pay attention to. The music almost told a story.

6

R9LH:

A little bit, it had some interesting sounds in the middle of the piece that made you want to find out what to expect next. But it wasn't really to my taste.

7

R12LH

No because it is mainly for blind people who need to understand what is really happening, however I would because it is very relaxing and makes you aware.

8

R11LH

No because I like music with lyrics and beats with it, and I'm not used to it.

9

R13LH

No. It is not the sort of thing I like, (sic) I would prefer to sit outside and listen.

10

R6LH

Yes as listening to sound based music makes me feel it is not always necessary for you to see things in front of you. You sometimes need to hear things to enhance the atmosphere.

11

R4LH

Yes because it is very interesting and takes you to a different place and makes you feel calm and relaxed.

Subsection 3.3.2

1

R8LH

You could hear the sounds much better so I was really listening more.

2

R5LH

They all seemed to be outside by nature. Like in a forest. I could hear perfectly where sounds were coming from. Woodlands area.

3

R1LH

*At the beginning it felt like they were outside in a park near a pond.
After I thought they were by road works, then a stream, then space.*

4

R10LH

*Yes because then you can imagine what is going on more and you
can see in your mind the picture.*

5

R1LH

*No, the title didn't really fit the sounds. At the end, apparently it was
supposed to sound like the fight for survival, though I felt like the
sound recorder was in a spaceship on the way to Mars.*

6

R1LH:

*A - As my eyes were closed, it meant I could concentrate more and
heard more too.*

7

R9LH

*B - When my eyes were closed I could imagine the place much more.
It was more visual.*

8

R14LH

*C - I don't think my opinion has changed as when I was listening to
it, it sounded the same apart from when I read the information it
made me understand it more.*

Subsection 3.3.3

1

R11LH

*The frogs sound more of a frog. The frog falls into water. Bubble
sounds appear.*

2

R12LH

It was more effective as the noises were coming from different directions. You could understand what was happening in the piece as it was like a story of music.

3

R3LH

B – I preferred the composition with the frog underneath water as it was more interesting and the sound effects were better. The pitch was higher above the water and much lower underneath.

4

R10LH

A - I think it sounded more interesting as it sounded more realistic and you could picture what was going on more.

5

R1LH

Yes – It meant I could listen out for sounds which were hidden in the background. It meant I stayed in focus for longer and made the soundscape more interesting.

6

R12LH

Yes - I don't usually sit down with my eyes shut listening if there is any sound. It makes you realize that even when it's silent there is always a sound, so now I know how to listen to the sounds more closely.

7

R7LH

No – Lots of things were going on at home so I didn't really concentrate on anything this week but last week we went to a beach and I could hear a lot and it sounded really nice so maybe it did help me a bit?

8

R1LH

No I'd prefer to just listen to natures (sic) sounds as I walk round town or whatever. I didn't like the thought it had been through the computer and edited beforehand. I'd rather walk round Leicester and hear my own sound based music rather than someone else's.

9

R9LH

Not really because this music isn't to my taste. It hasn't really got a beat and a tune, but it is interesting and new to me

10

R6LH

Yes, as it would help me in future and sound based music paints pictures in my head which I think is quite good.

11

R2LH

Yes because I think that it is very interesting and I like the fact that I can listen to sounds and build a picture in my head of what's going on.

Section 3.4

Subsection 3.4.1

1

R19K

a stone been dropped in the water and it took you with it

2

R3K

everything sounded kind of supernatural and alien.

3

R14K

No not really because the sounds were just so repetitive.

4

R13K:

It made me feel alert but calm, I wanted it to never end!

5

R23K

Not at home or on my ipod because I like music to sync with how I feel, but I would listen to it to relax, and what I'm thinking about.

6

R13K

Yes because I am not very musical but I like spotting all the different sounds. I would also like to start composing some sound based music in the near future.

7

R2K:

Yes because you hear sounds you've never heard before and it's more natural music. It's also in a way telling a story.

8

R12K:

Yes because it was unique and cool! I've never heard something like that before.

Subsection 3.4.2

1

R9K:

Everything seemed clearer and I could recognize what I thought some of the sounds could be.

2

R18K

With my eyes shut it felt 3D because like the birds were coming for you.

3

R19K

I found that I heard and listened harder the second time because I was concentrating more.

4

R9K:

Yes, I got the sense that I was in a tropical jungle with all the birds, insects and animals and that men with guns and helicopters were exploring.

5

R1K:

Outside next to a road and next to a river. Not a busy road. The river is surrounded by plants filled with nature.

6

R19K

Yes and no. Yes because I knew what they heard. But no because there were other things included than on the paper!

7

R7K

Yes because now I understand the story and why there were birds twittering at the end to show it was morning.

8

R22K

No because I couldn't work out when it was night or day.

9

R20K

A – It was more because my eyes weren't distracting my attention. And I focused on the noises/music.

10

R7K

A - Because the sounds all fit together to make a story which makes it easier to understand why some sounds are there.

Subsection 3.4.3

1

R5K

I preferred because especially on the engine bit it is more drumlike.

2

R13K

I enjoyed the bird sounds more but before I found them a tad annoying.

3

R19K

I liked it more because you listened to what I had to say and changed it!

4

R23K

In the last piece there was a good balance between mechanical and nature but because in the new one there is more mechanical, it ruins the balance.

5

R21K

I am so use to using my eyes as my main sense.

6

R13K

Yes because before I wouldn't listen to the underlying sounds I would just think of the foreground.

7

R15K

It helps me focus on certain sounds and helps my imagination about things.

8

R4K:

The listening exercises helped me listen to the sounds more clearly, they became more clear and louder.

9

R3K

Yes I would because it is different and not something that I'd usually think about. It will also be fun to make our own compositions.

10

R14K

No because I don't really like listening to edited sounds I like natural sounds.

11

R17K

No because I like different types of music but I did enjoy it.

Section 3.5

Subsection 3.5.2

VI1 Comment:

1

I was quite surprised when you spoke as I'd forgotten I was here, because I was kind of taken away, what I was interested in was what did I hear those sounds as, because they fire off different things in your mind.

2

In my mind I was building up a picture of what it looked like and then I was following what the sounds evoked for me.

3

This is stuff we blind people do all the time, but interestingly for me it's going to be quite alien to them

4

Sounds like a mill basin, doesn't sound like surf cause it sounds like constant running rapids. That deep sound on the left, is that boulders again or the wind?

5

'Now I know that's Fingal's cave that does evoke quite weird feelings for me, just 'cause of the association with it.'

6

The market was either in an enclosed area but outdoors or it was inside but I think it was the first, a bit like the market at the bullring. If it was a realistic recording I would say the Asian ladies were probably about 20-30 yards further down on the left than the guy selling the apples on the right. You see this is how we do this kind of mental mapping.

7

Yes, the comment I often hear is that blind people use sound in the way bats use sonar. Except it's not quite the same as that ... for blind people ... all it would take is for example say a lorry being in a narrow space for the sounds to bounce around a bit and for it to get a little bit more muddled and then you wouldn't be able to get the sense of direction as easily...

I remember walking on a foggy day and missing all the usual cues as the water in the air scatters the sound, the echoes weren't coming back it just sounded completely dead. Also when it snows the snow kind of absorbs the sound, there's a lovely stillness... An interesting addition to that is the ability to hear something which isn't moving. For example when you go past a bus shelter between you and the road you find it forms a sound shadow. Or if you go between for example a van and a wall you can tell that as it goes kind of boxy.

8

Quite dark it reminded me of the film 'One flew over the cuckoo's nest'. I had a picture of someone in a psychiatric unit who wasn't supposed to be there. Just getting that feeling of being unnerved.

9

I think they were two different experiences. When I listened to it on my own.... Seamus Heaney once said that you only write 10% of a

piece of work the other 90% is what people bring to it in terms of interpretation, sometimes it's not that they're wrong it's just what they get out of it. So actually the first time and second time were different, the second time had more of your input so I felt I heard more of your piece of music, the first time I heard your sounds but more of my interpretation as I had less information to go on. So yeah it definitely helped.

10

For example somebody else might say the sounds evoke something completely different and once you hear someone else say that, that will influence how you then hear it.

11

It would be particularly interesting to make a library of natural recordings and grade them and put them together, so they come from different places and give the sense of being somewhere else.

12

I think it's important to learn to listen to it not as normal music.

Subsection 3.5.3

VI2 Comment:

1

If they've not always been blind people take that baggage with them, there is a significant difference in the way people do things I've noticed

2

That's the sound you'd get if you were in a tunnel underneath and a train goes over the top and the tracks were a bit loose and it goes de dum. And it was the timing that hinted it was that and it might not have been, the sound was roughly right but the timing suggested that to me.

3

There's some truth in it but you (the blind) use sound in a different way, if I've lost something and I think it might be in some pocket of some jacket I go round shaking them, I know what sound that object will make, so things don't have just say a colour attached to them they have a sound attached to them. If you drop something and as long as it makes a noise somewhere not only can you tell roughly where it is but you can actually tell possibly what you've actually dropped... A sound has to actually happen, for a sighted person it's all around them, they're looking all the time, but a sound has to happen for you to notice it.'

4

Sighted people appear to be deaf because they don't respond if they can't see you. Their vision has dominated them that much that actually they don't really listen to things and they constantly lip-read, they think they just do it in sort of noisy pubs but actually they do it a lot of the time. You move away from them and they can't see you they can't tell what you're saying.

5

There was a pathway I used to walk along with a fence along one side and it was a wire mesh fence and it sounded differently as it seemed to it filter sounds through it. Walls and fences often act as sound barriers so you know they're there, not only that but people do too, usually late at night you'll know they're there.'

5.6. Appendix 6 - Beta Questionnaires and revisions (*in italics*)

Changes made after first beta test

For the first questionnaire these two questions were omitted –

Did you prefer the sounds you recognised or the more abstract sounds?

Did the composition conjure images/pictures in your mind?

The composition contained few completely abstract sounds and the young listeners struggled to understand the meaning of the question, so the first was felt to be unnecessary as it was unlikely to provide useful data. The second had very similar responses to the question on source recognition so was also unnecessary.

Did you get a sense of the environment that the sounds occupied? If so do you know what gave you this sense?

This question was reworded, as many listeners did not seem to fully understand it. In order to reduce the number of questions in the first questionnaire it was moved to the second and changed to –

Did you get a sense of the place that the sounds occupied (for example they might appear to be inside or outside, in a small or a large room, in a dense or a wide open space)? If so, what kind of place?

For the second questionnaire these questions were omitted -

**Did you notice any different abstract /strange/unnatural sounds?
If so, can you describe them?**

Did you notice anything new about the space the sounds occupied? If so what?

Did you notice any movement of one/some of the sounds that you hadn't noticed before? If so can you describe it?

These caused some confusion as many listeners felt the questions regarding space and movement were asking something very similar. These three were removed as there was already a general question concerning differences noticed by listening another time, plus the sense of place question already asked about space.

Questionnaires used for beta tests in schools

After First Listening

1) Which sounds did you recognise in the composition?

**2) Did you notice any of the sounds coming from different parts of the room?
Can you describe which?**

**3) Did you notice whether any of the sounds were moving? If so can you
describe which ones?**

Q3 was removed for final test as it often resulted in answers very similar to Q2.

**4) Did you get a sense of the kind of place the sounds were (for example they
might appear to be inside or outside)? If so, what kind of place?**

*Q4 was moved in the final tests to 2Q as it was hoped a greater understanding of this
would develop throughout the workshop.*

**5) Did you notice if the sounds changed as the composition went on? If so,
how?**

*Q5 was investigating if participants noticed the structure and was removed for the
final tests as responses to it were confused and it was not considered a key question
in relation to the aims of the project.*

6) What parts did you find most interesting?

7) What parts did you find least interesting?

**8) Overall did the composition make you want to keep listening or was it
uninteresting?**

Can you please explain why?

9) Would you choose to listen to something similar in the future?

If yes, why? If no, why not?

'Something similar' was changed in this question and the final question in 3Q to 'sound-based' music for the final tests. This was because some responses were focussing on something similar to 'Night and Day' but this was meant as a question about access to sound-based music in general.

After 2nd Listening

Please complete the following – please give as much detail as possible.

NAME:

1) Did you recognise any sounds this time that you didn't hear the first time around?

If so, what were they or can you describe them?

2) Did you notice anything else you hadn't noticed the first time? If so, what?

Q2 above had little response as many listeners felt it was too similar to Q1 above so it was decided after the Abington session to have one question, which asked –

1) Please describe anything new you noticed by listening a second time.

2) After doing the listening exercises and listening to the piece again, did you find it (please circle) –

A – More interesting

B – Slightly more interesting

C – No difference

D – Less interesting

If less or more, why do you think that was? If no difference, why do you think your opinion hasn't changed?

Second session (3rd Listening)

Please complete the following – please give as much detail as possible.

1) What differences did you notice from last time you heard the composition?

2) Did you find it (please circle) –

A – More interesting

B – Slightly more interesting

C – No difference

D – Less interesting

If less or more do you what changed your view? If no difference why do you think that was?

3) Did the title and information from the composer help you to understand the composition?

If yes, how? If no, why not?

This was moved to the second questionnaire as this was presented before the second listening in the final tests.

4) Do you think the listening exercises in each session have helped you to listen more closely to the sounds? Y/N (please circle).

If yes, how did this affect how you felt about the composition?

If no, why do you think they didn't help?

5) Now you have completed the workshops and heard the composition again, would you choose to listen to something similar in the future?

If yes, why? If no why do you think this is?

References

Augoyard, J.F., Torgue, H. (2005) *Sonic Experience: A Guide to Everyday Sounds*, Montreal:McGill-Queen's University Press.

Barrett, N. (2007) Trends in electroacoustic music. *in* Collins N. and d'Escriván J. (ed.) (2007), *The Cambridge Companion to Electronic Music*, Cambridge:Cambridge University Press

Brulin, G. (2001) The Third task of Universities or How to get Universities to Serve their Communities! *In* Reason, P. and Bradbury, H. (Eds.) (2001), *Handbook of Action Research - Participative Inquiry and Practice*. London: Sage.

Copeland, D. (1999), Is it Indifference or Ambiguity? *Journal of Electroacoustic Music*, 12, pp. 6-8.

Copeland, D. (2000), Associative Listening, *Soundscape: The Journal of Acoustic Ecology*, 1 (1), pp. 23-25.

Cox, C. and Warner, D. (ed.) (2004), *Audio Culture: Readings in Modern Music*, London: Continuum

Crossman, R. (1980). Do Readers Make Meaning?. *In* Suleiman, S. R. and Crosman, I. (Eds.) *The Reader in the Text – Essays on Audience and Interpretation* NJ: Princeton University Press. 149-164.

Cumberland, M. (2001), Bringing Soundscapes Into the Everyday Classroom, *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 16-20.

Delalande, F. (1998) Music Analysis and Reception Behaviours: Sommeil by Pierre Henry, *Journal of New Musical Research*, 27 (1-2) pp. 13-66

Denzin, N. and Lincoln, Y. (Eds.) (2003) *The Landscape of Qualitative Research: Theories and issues*. (Second Edition). London: Sage.

Drever, J. (2009) Soundwalking: Aural Excursions into the Everyday. In Saunders, J. (ed.) (2009), *Ashgate Research companion to experimental music* Farnham: Ashgate

EARS: ElectroAcoustic Resource site (n.d.) *Reduced Listening*, [online] available from <http://www.ears.dmu.ac.uk/spip.php?rubrique219> (Accessed August 2011)

Emmerson, S. (1986) The Relation of Language to Materials. In Emmerson, S. (ed.) (1986), *The Language of Electroacoustic Music* London: Macmillan

Gougoux, F., Lepore, F., Lassonde, M., Voss, P., Zatorre, R.J., Belin, P. (2004), Pitch discrimination in the early blind, *Nature*, 430, p. 309.

Hargreaves, D. J. (1982) The development of aesthetic reactions to music, *Psychology of Music*, (Special issue) pp. 51–54.

Hargreaves, D. J. 1984. The effects of repetition on liking for music. *Journal of Research in Music Education*, 32, pp. 35-47.

Hargreaves, D.J., Marshall, N. A. (2003) Developing Identities in Music Education, *Music Education Research*, 5 (3) pp. 263 – 274.

Harrison, J. (1996) *Articles indéfinis*. [CD Liner notes]

Hollings, K. (2010), Chris Watson: Defying the Wilderness, *The Wire*, 318, pp. 50-55.

Holub, R. (1984) *Reception Theory – A critical introduction*. London: Routledge.

Higgins, A.M (2004), *The Music of Sound: A Constructivist Approach to the*

Comprehension of Electroacoustic Music, through the Composition of Musique Concrète, at Post-Primary School Level, MSc Dissertation, University of Dublin
[online] available from
http://www.scss.tcd.ie/postgraduate/msctl/current/Dissertations/Higgins_Anne_Marie.pdf (Accessed June, 2011).

Hill, A. (2010), *Investigating Audience Reception of Electroacoustic Audio-visual Compositions*, [online] available from
http://cec.sonus.ca/econtact/12_4/hill_reception.html (Accessed June, 2011).

Hull, J. (2001), Sound: An Enrichment or State, *Soundscape: The Journal of Acoustic Ecology*, 2 (1), pp. 10-15.

Hull, J. (1990) *Touching the Rock: An Experience of Blindness*. Melbourne:David Lovell Publishing

Kim, S.J. (2010) Imaginal Listening: a quaternary framework for listening to electroacoustic music and phenomena of sound-images, *Organised Sound*, 15 (1) pp. 43-53.

Kolber, D. (2002) Hildegard Westerkamp's Kits Beach Soundwalk: Shifting perspectives in real world music, *Organised Sound*, 7 (1), pp. 41-43.

Kopiez, R., Lehmann, M. (2008) The 'open-earedness' hypothesis and the development of age-related aesthetic reactions to music in elementary school children. *British Journal of Music Education*, 25 (2), pp. 121-138.

Landy, L. (1990) Is more than three decades of computer music reaching the public it deserves? *Proceedings: International Computer Music Conference, Glasgow*, pp. 369-372.

Landy L. (1994) The “Something to Hold on to Factor” in Timbral Composition, *Contemporary Music Review*, 10 (2), pp. 49-60.

Landy, L. (1999) Reviewing the musicology of electroacoustic music: a plea for greater triangulation, *Organised Sound*, 4 (1), pp. 61-70.

Landy, L. (2004) Editorial, *Organised Sound*, 9, (3), pp. 226-228.

Landy, L. (2005) Investigating Compositional Intent and Reception: Two Case Studies –*Prochaine Station* by Christian Calon and Claude Schryer and *Valley Flow* by Denis Smalley. In Simoni, M. (Ed.). *Analytical Methods of Electroacoustic Music*. NY:Routledge.

Landy, L. (2007) *Understanding the Art of Sound Organization*. Cambridge: Massachusetts Institute of Technology

Lopez, F. (2001) Profound Listening and Environmental Sound Matter. in Cox, C. and Warner, D. (eds.) (2004), *Audio Culture: Readings in Modern Music*, London: Continuum

Lusseyran, J. (1963) *And there was light* (E.R. Cameron. Trans.). Boston:Little, Brown.

Marshall, C. and Rossman, G. (1999). *Designing Qualitative Research*. (Third Edition). London: Sage.

McCartney, A. (1999). *Sounding Places with Hildegard Westerkamp*. PhD thesis, Graduate Programme in Music, York University, Toronto. [online] available from <http://www.emf.org/guidetotheworld/artists/mccartney00/index.html> (Accessed March 2011).

McCartney, A. (2002), Alien intimacies: hearing science fiction narratives in Hildegard Westerkamp's 'Cricket Voice', *Organised Sound*, 7 (1), pp. 45-49.

McGinley, R. (2001), Stockholm Soundscape Project New Directions in Music Education, *Soundscape: The Journal of Acoustic Ecology*, 2 (2), pp. 25-29.

Montgomery, W. (2009) Beyond the Soundscape: Art and nature in Contemporary Phonography. In Saunders, J. (ed.) (2009), *Ashgate Research companion to experimental music* Farnham:Ashgate.

Norman, K. (1996) Real-World Music as Composed Listening, *Contemporary Music Review*, 15 (1) pp. 1-27.

Norman, K. (2004). *Sounding Art: Eight Literary Excursions through Electronic Music*. Hants: Ashgate.

Norman, K. (2010) Conkers (listening out for organized experience), *Organised Sound* 15 (2) pp. 116-124.

Norris, M. (1999), *Reinstating Interpretation: The status of Analysis in an Electroacoustic Context. Proceedings: Australian Computer Music Conference. Victoria: University of Wellington: 63-66*, [online] available from http://pandora.nla.gov.au/pan/10054/20011007-0000/farben.latrobe.edu.au/mikropol/volume5/norris_m/norris_m.html#_ftn1 (Accessed June 2011).

O'Callaghan, (2011) Soundscape Elements in the Music of Denis Smalley, *Organised Sound* 16 (1), pp. 54-62.

Pennycook, B. (1992). Composers and Audiences: New Relationships in the Technological Age. In Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.).

Companion to Contemporary Musical Thought – Volume 1. London: Routledge.

Psychology Today, (2009) Mountain Biking with the Blind [online] available from <http://www.psychologytoday.com/blog/sensory-superpowers/200907/mountain-biking-the-blind> (Accessed, June, 2011).

Regelski, T. A. (1992). The Action Value of Musical Experience and Learning. In Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.). *Companion to Contemporary Musical Thought – Volume 1*. London: Routledge.

Rudy, P. (2007), Timbral praxis: when a tree falls in the forest *is it music?*, *Organised Sound*, 12(1), pp. 5–13.

Sacks, O. (2008) *Musicophilia: Tales of Music and the Brain*. London: Picador.

Schafer, R.M. (1977), *The Tuning of the World*. Rochester: Destiny Books

Schaeffer, P. (1966), *Traité des objets musicaux*. Paris: Éditions du Seuil.

Sloboda, John A. (1994) *The Musical Mind - The Cognitive Psychology of Music*. Oxford University Press: Oxford.

Smalley, D. (1986) Spectro-morphology and Structuring Processes. *in* Emmerson, S. (ed.) (1986), *The Language of Electroacoustic Music* London: Macmillan

Smalley, D. (1992). The listening imagination: Listening in the electroacoustic era. In . Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.). *Companion to Contemporary Musical Thought – Volume 1*. London: Routledge.

Smalley, D. (1997) Spectromorphology: explaining sound-shapes, *Organised Sound*, 2 (2), pp. 107-26.

Smalley, D. (2007) Space-form and the acousmatic image, *Organised Sound*, 12 (1), pp. 35-58.

Sounds Like Staten Island, (2009) *Clean Your Ears* [online] available from <http://soundlikestateniland.com/node/16> (Accessed November 2010)

Stead, M. (2009) *Examining Intention and Reception in Electroacoustic Music: An Empirical Enquiry and Post-structural Analysis*, [online] available from <http://www.ems-network.org/ems09/papers/stead.pdf> (Accessed July 2011)

Therapontos, N. (2011) *Sound-Based Music Concepts and Practices in Primary and Secondary Schools of Cyprus and ICT, Abstract Book, Sound, Sight, Space and Play 2011, Postgraduate symposium for the creative sonic arts, 8th-10 June, De Montfort University, Leicester* [online] available from <http://www.benramsay.co.uk/sssp/abstractbook2011.pdf> (Accessed July 2011)

Truax, B. (1997). *Listening and the Electroacoustic Community*. "Ganzohr" Symposium Text, Hessische Rundfunk, Kassel, Germany. [online] available from <http://www.sfu.ca/~truax/ganzohr.html> (Accessed April 2011).

Truax, B. (1999) Letter to a twenty-five-year old electroacoustic composer, *Organised Sound* 4 (3), pp. 147-150.

Truax, B. (2001) *Acoustic Communication*, Westport: Ablex.

Truax, B. (2002) Genres and techniques of soundscape composition as developed at Simon Fraser University, *Organised Sound*, 7 (1), pp. 5-14.

Tyson, L. (2006) *Critical Theory Today*, New York: Routledge.

Weale, R. (2005) *The Intention/Reception Project. Phd. Thesis, De Montfort University, Leicester* [online] available from <http://www.aural-initiative.com/thesis.pdf> (Accessed November 2010).

Weale, R. (2006) Discovering How Accessible Electroacoustic Music Can Be: the Intention/Reception project, *Organised Sound*, 11 (2) pp. 189-200.

Weale, R. (2008). Exploring our Relationships with Sound-based Music, Electroacoustic Music Studies Network Conference – *Proceedings: EMS08 – Electroacoustic Music Studies Network International Conference Series*. [online] available from <http://www.ems-network.org/ems08/papers/weale.pdf> (Accessed March 2011).

Westerkamp, H. (1999) Soundscape Composition (1) : Linking Inner and outer Worlds [online] available from <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundscapecomp.html> (Accessed March 2011).

Westerkamp, H. (2001) Soundwalking, [online] available from <http://www.sfu.ca/~westerka/writings%20page/articles%20pages/soundwalking.html> (Accessed November 2010) Originally published in *Sound Heritage*, 3(4), 1974.

Westerkamp, H. (2002). Linking soundscape composition and acoustic ecology. *Organised Sound*, 7 (1), pp. 51-56.

Windsor, W. L. (2000). Through and around the acousmatic: the interpretation of electroacoustic sounds. In Emmerson, S. (Ed.). *Music, Electronic Media and Culture*. Aldershot: Ashgate)

Wishart, T. (1986) Sound Symbols and Landscapes. *in* Emmerson, S. (ed.) (1986), *The Language of Electroacoustic Music*, London:Macmillan

Wishart, T. (1996) *On Sonic Art*, Amsterdam: Harwood Academic.

Woody, R. H. (2004) Reality-Based Music Listening in the Classroom: Considering Students' Natural Responses to Music, *General Music Today*, 17 (2), pp. 32-39.

Wrightson, K. (2000) An Introduction to Acoustic Ecology, *Soundscape: The Journal of Acoustic Ecology*, 1 (1), pp. 10-13.

Bibliography

Adkins, M. (1999). *Acoustic Chains in Acousmatic Music. Proceedings: Australian Computer Music Conference*. 56-62.

Atkinson, S. (2007) Interpretation and musical signification in acousmatic listening, *Organised Sound*, 12 (2), pp 113-122.

Camilleri, L. and Smalley, D. (1998) The Analysis of Electroacoustic Music: Introduction, *Journal of New Music Research*, 27 (1-2) pp. 3-12.

Chadabe, J. (2004) Electronic music and life, *Organised Sound*, 9 (1) pp. 3-6.

Chadabe, J. (2004a). Look around and get engaged, *Organised Sound*, 9 (3) pp. 315-316.

Dietze, L. (2000), Learning is Living: Acoustic Ecology as Pedagogical Ground, *Soundscape: The Journal of Acoustic Ecology*, 1 (1), pp. 20-22.

Ferrington, G. (1994), *Keep Your Ear-Lids Open*, *Journal of Visual Literacy* 14 (2), pp. 51-61. [online] available from <http://www.ohio.edu/visualliteracy/> (Accessed June 2011).

Gaver, W. W. (1993), 'What in the world do we hear? An ecological approach to auditory event perception', *Ecological Psychology*, 5 (1), pp. 1-29.

Gougoux, F., Zatorre, R. J., Lassonde, M., Voss, P., & Lepore, F. (2005). A functional neuroimaging study of sound localization: Visual cortex activity predicts performance in early-blind individuals. *PLoS Biology* 3(2), e27, pp. 324-333.

Landy, L. (1994a). *Experimental Music Notebooks*, London: Harwood.

McCartney, A. (1995). *The Ambiguous Relation - Part 1*. [online] available from <http://cec.concordia.ca/contact/contact9107.html> (Accessed May 2011)

McCartney, A. (2000), *Soundscape Composition and the Subversion of Electroacoustic Norms*, [online] available from <http://cec.concordia.ca/econtact/Histories/SoundscapeComposition.htm> (Accessed April 2011)

Norman, K. (2000). Stepping outside for a moment: narrative space in two works for sound alone. In Emmerson, S. (Ed.). *Music, Electronic Media and Culture*. Aldershot: Ashgate.

Proy, G. (2002) Sound and sign, *Organised Sound* 7 (1) pp.15-19.

Regelski, T.A. (2002) Sound Compositions for expanding musicianship education, *Organised Sound* 7 (1) pp. 29-40.

Reitan, L. (1992). Does it really mean anything? Some aspects of musical meaning. In Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.). *Companion to Contemporary Musical Thought – Volume 2*. London: Routledge.

Schafer, R. M. (1992). Music, non-music and the soundscape, *In* Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.). *Companion to Contemporary Musical Thought – Volume 1*. London:Routledge.

Truax, B. (1992). Electroacoustic Music and the Soundscape: The Inner and Outer World. *In* Paynter, J., Howell, T., Orton, R. and Seymour, P. (Eds.). *Companion to Contemporary Musical Thought – Volume 1*. London: Routledge.

Disc Contents

Night and Day (Binaural mix)

Plus 5.0 surround sound and stereo mixes for:

Night and Day (Original)

Night and Day (Final)

Soundwalks